WILCOX OIL COMPANY BRISTOW, CREEK COUNTY, OK EPA CERCLA I.D. NO.: OKD001010917

Prepared for

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Project Team Leader

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SECTION 1 INTRODUCTION

1.1 BACKGROUND

Under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the 1986 Superfund Amendments and Reauthorization Act (SARA), Roy F. Weston, Inc. (WESTON®) has completed an Expanded Site Inspection (ESI) of the Wilcox Oil Company (Wilcox) site (EPA Identification No.: OKD001010917) located in Bristow, Creek County, Oklahoma (Figure 1-1). The U.S. Environmental Protection Agency (EPA) Region 6 retained WESTON to complete this investigation under EPA Contract No. 68-W9-0015 and Work Assignment No. 56-6JZZ.

This document represents the final report for the ESI. The purpose of this report is to provide the background information collected for the site, to discuss the ESI sampling activities, and to present the analytical data obtained as part of the investigation.

1.2 OBJECTIVES OF THE INVESTIGATION

The ESI is intended to be the final investigation in an ongoing screening process of known and potential hazardous waste sites. The general purpose of an ESI is to identify immediate or potential threats that hazardous substances attributable to the site may pose to human health and the environment by documenting the existence and migration of hazardous substances related to the site and by identifying the receptors, or targets, potentially exposed to the hazardous substances. The specific purpose of this ESI was to perform a reasonable effort characterizing sources of CERCLA-eligible hazardous substances at the site and evaluating whether a release to surface water has occurred.

EPA will use the information obtained during the ESI to evaluate the site using the Hazard Ranking System (HRS) and to help decide if the site is a potential candidate for inclusion on the National Priorities List (NPL). The intent of the ESI is to provide the documentation necessary to either rank a site on the NPL or to assign a "No Further Remedial Action Planned" (NFRAP) status.

1.3 SCOPE OF WORK

The ESI Scope of Work was centered on characterizing the site through the completion of limited site-related research, a site reconnaissance, and focused sampling activities. As part of this ESI, WESTON performed the following major tasks:

• An on-site reconnaissance was performed on 16 August 1996 to document current site conditions and to identify potential sources of hazardous substances at the site. WESTON performed the reconnaissance in general accordance with WESTON's Generic Site Inspection Work Plan (Document Control No. 4603-23-0008, dated 15 August 1991), the site-specific Health and Safety Plan (HASP) prepared by

WESTON for the ESI, and the EPA Guidance for Performing Site Inspections under CERCLA, dated September 1992. During the site reconnaissance, two WESTON personnel visited the site, walked around the property, recorded observations in a logbook, and took photographs (Appendix A) to document site conditions. As part of the reconnaissance, a survey of the site's vicinity was completed to identify potential receptors, or targets, of hazardous substance migration and exposure attributable to the site. Nearby land use and potential alternative source sites were also documented.

- A site-specific Task Work Plan (TWP) was prepared to provide a detailed plan of action for subsequent ESI activities.
- Information concerning the environmental setting of the site was obtained to describe the groundwater, surface water, soil exposure, and air pathways.
- Available regulatory compliance files from federal, state, and local government agencies were reviewed, and telephone interviews were conducted with authorities knowledgeable of the site and its surroundings.
- WESTON field personnel performed sampling tasks from 18 through 20 November 1996. Samples were collected in known or suspected source areas at the site and in the suspected pathways of contaminant migration and exposure. The samples were collected in general accordance with the site-specific TWP and HASP to document the presence and migration of hazardous substances attributable to the site.
- Available information from on-site observations, records review, interviews, site area environmental and demographic characteristics, and historical sample analyses were evaluated.
- The ESI samples were sent to EPA-designated laboratories for analysis, and the resulting data were reviewed and tabulated.
- This report was prepared to present the findings of the ESL

1.4 REPORT FORMAT

The ESI Report is presented in a format that is intended to facilitate evaluation of the site using the HRS. The report contains the following sections:

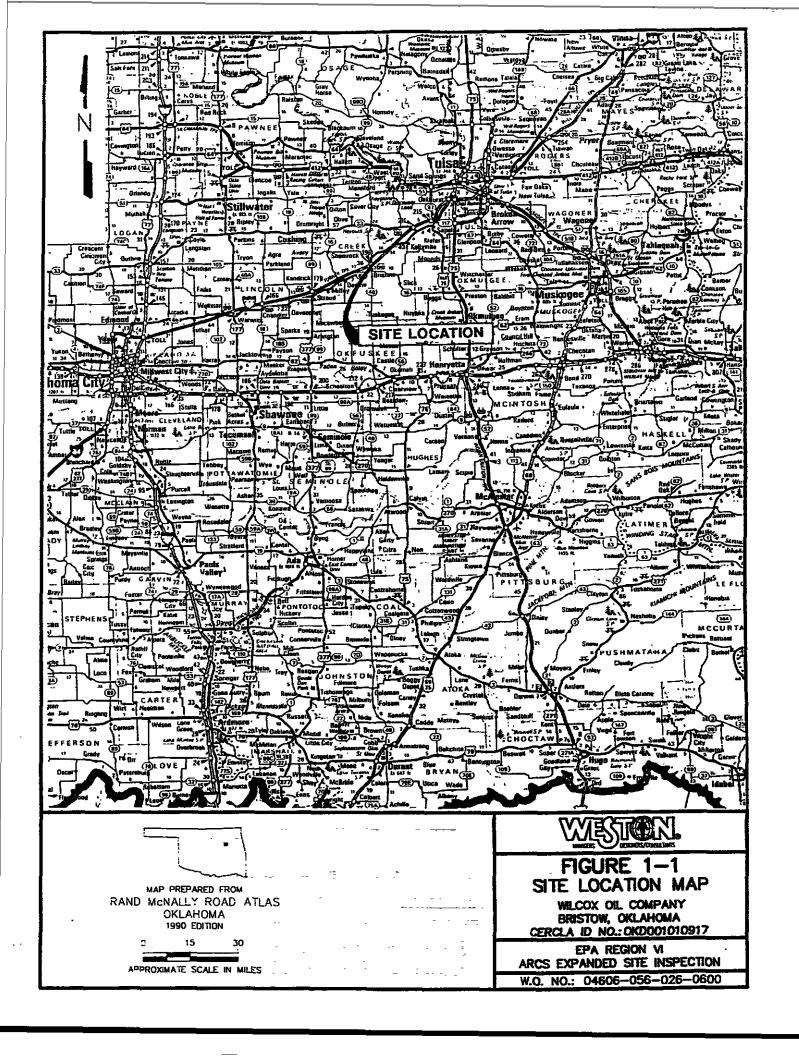
- Section 1—Introduction
- Section 2—Site Characteristics
- Section 3—Sample Collection and Analysis
- Section 4—Source Characterization
- Section 5—Groundwater Pathway
- Section 6—Surface Water Pathway

- Section 7—Soil Exposure
- Section 8—Air Pathway
- Section 9—Conclusions
- Section 10—References

Additional information is provided in the appendices following the text of the report. The appendices are as follows:

- Appendix A—Photographs
- Appendix B—Data Package Excerpts
- Appendix C—Analytical Results Summary
- Appendix D—CRQLs and CRDLs
- Appendix E—References

The figures and tables referred to throughout sections of this report are provided following the text of each section.



SECTION 2 SITE CHARACTERISTICS

WESTON collected and reviewed available background information regarding the location, description, operational history, and regulatory compliance of the site. The discussion in this section of the report is based on this background information, which is referenced throughout the text.

2.1 SITE DESCRIPTION AND BACKGROUND INFORMATION

The following characteristics of the site are summarized in this section of the report:

- Site Location
- Site Ownership
- Site Description
- Site Operational History
- Previous Investigations
- Nearby Land Use

2.1.1 Site Location

The site location was identified based on information provided in the Preliminary Assessment (PA) and observations made during the site reconnaissance (References 1 and 2). The Wilcox site includes an abandoned and demolished oil refinery and associated tank farm and is located north of Bristow, Creek County, Oklahoma. The site can be reached by traveling southwest on Interstate 44 (I-44) from Tulsa, Oklahoma, for approximately 35 miles. Exit State Highway 66 and continue south, approximately 0.5 mile to an unnamed section line road. Turn left on the section line road and travel approximately 0.2 mile east until you reach the site (References 1 and 2). The geographic coordinates of the site are approximately 35°50'31" North latitude and 96°23'02" West longitude (Reference 1). A Site Area Map derived from a U.S. Geological Survey (USGS) 7.5-minute topographic map is provided as Figure 2-1 (Reference 3).

2.1.2 Site Ownership

Based on EPA file information, the site is currently owned by four individuals: Mr. Phil Elias, Mr. Jack White and Mr. Arthur White (father and son), and Mr. and Mrs. Lee. Jack and Arthur White own most of the property that contains the original refining facility (Reference 1). The Eliases own most of the tank farm area (approximately 80 acres), which is currently not in use. The Lees own property located in the south central portion of the site on the eastern edge of the White's property (and former refining facility).

Access agreements were obtained from all parties prior to ESI sampling activities with the exception of Mr. and Mrs. Lee. Access to the Lee property was obtained from Mrs. Lee in the field (Reference 2). Copies of the signed access agreements are included in Reference 4.

2.1.3 Site Description

The Wilcox site includes remnants of an inactive oil refinery and associated tank farm. Based on recent conversations with the Oklahoma Department of Environmental Quality (ODEQ), the site boundaries have been revised from those defined in the 1994 PA to include only those areas in which Wilcox Oil Company conducted operations (Reference 5). Although Wilcox Oil Company owned property west of the railroad tracks (currently occupied by the First Assembly of God Church and pastor's residence), the facility only operated on the properties to the east of the tracks. Other refineries operated on the west side of the railroad tracks. The revised site covers approximately 98 acres and includes the northern portions of Section 29, Township 16 North, Range 9 East (Indian Meridian) (Reference 1 and 5).

The site can be divided into two major former operational areas: the refinery and the tank farm. The former refinery area is fenced and covers approximately 18 acres (Reference 1). Most of the refinery structures and tanks have been removed or are in ruins. Four aboveground storage tanks (12,500 gallons each) remain standing, in addition to a number of discarded drums and pieces of scrap iron. A bare, unvegetated area is located in the southcentral portion of the refinery. A building in the northern part of the former refinery has been converted to a residence. An intermittent creek (Tributary 1) flows southward across the eastern portion of the refinery area through a small pond in the southeast corner of the refinery area into Sand Creek.

The former tank farm covers approximately 80 acres and contains pits, ponds, and a number of circular berms that surround tank bottoms. All of the tanks have been cut down and removed; however, remnants of the tank bottoms remain and are visible. Many of the berms surrounding the pits, ponds, and former tanks have been cut or leveled. An intermittent creek (Tributary 2) is located in the eastern portion of the tank farm and flows south to Sand Creek.

A pumping or gas compressor station exists in the northcentral portion of the site (References 1 and 3). A Williams Company pipeline crosses from northwest to southeast across the middle of the site (Reference 2). A Site Plan showing the layout of the site is provided as Figure 2-2 (References 6 and 7).

2.1.4 Site Operational History

Wilcox Oil Company operated as a crude oil refinery from the 1920s until the property was sold by Wilcox Oil Company on 1 November 1963 (Reference 1). According to a 1930 article published in *The Refiner and Natural Gasoline Manufacturer*, the Wilcox Oil Company refinery was operated as a pilot project from about 1920 to 1928 at 1,000 barrels of oil per day by Riley Petroleum Company (Reference 8). Wilcox Oil Company acquired the original facility property (NE ¼, NW ¼, NW ¼ of Section 29) on 11 October 1928 from A.A. Rollestone (Reference 1). A modern skimming and cracking plant was constructed in 1929. The upgraded facility had an operating capacity of 4,000 barrels of crude oil per day. The main components of the system consisted of a skimming plant, cracking unit, and redistillation battery with a vapor recovery system and continuous treating equipment. The crude oil was brought directly from the field, eliminating storage and handling facilities, but resulting in crude with high bottom sediment and water.

At some later date, the Wilcox Oil Company expanded operations by acquiring the former Lorraine Refinery facility west of the railroad and the tank farm area to the east of the refinery (Reference 1). The company sold the original site plus the expanded areas, totaling approximately 110 acres, to Wendel Sandlin on 1 November 1963. Most of the equipment and storage tanks that remained on-site in 1963 were auctioned and have been salvaged for scrap iron by private land owners. The Wilcox Oil Company no longer operates in Oklahoma, and, based on information acquired from the Oklahoma Secretary of State's office, this company merged with Tenneco Oil Company in 1967. According to file information, Jack and Arthur White acquired the original refinery property from J.M. and Kinis Bankston on 27 March 1973. It is not known if, or when, the Bankstons acquired the property from Wendel Sandlin.

Jack White's other son and daughter-in-law, Roy and Eva White, live on the site in one of the former refinery buildings (Reference 9). The Whites have salvaged the former refinery tanks and structures for scrap iron. The Lees live on-site in a mobile home. Three people, Mr. and Mrs. Lee and their 16-month-old daughter, live at the Lee residence (Reference 2). The Lees raise chickens and horses on their property. Based on aerial photographs, the Lee residence is on top of a former surface impoundment (References 6 and 7). Aerial photos also indicate that their property includes portions of a former aboveground storage tank and berm, in addition to a second surface impoundment.

2.1.5 Previous Investigations

WESTON reviewed available EPA CERCLA file information regarding site investigations and activities completed prior to this ESI. These investigations and their results are summarized below:

- EPA completed a Potential Hazardous Waste Site Identification form on 7 June 1994 (Reference 10).
- The ODEQ performed a PA for the Wilcox site on 15 December 1994 (Reference 1). The PA indicated that contamination of groundwater and soils at the site had been observed and that potential receptors exist for these pathways. The PA then recommended a Site Inspection be conducted in order to better characterize the site and to determine whether threats to human health and the environment exist.

2.1.6 Nearby Land Use

Land use in the vicinity of the site was observed during the site reconnaissance. The site is located near the northern city limits of Bristow, Oklahoma. The land adjacent to the site is described as follows (References 1 and 2):

- The site is bordered to the east and southeast by undeveloped land and scattered farms.
- The site is bordered immediately to the southwest by the City of Bristow.

- The site is bordered immediately to the north by undeveloped land with scattered residences and commercial properties. Historical data such as aerial photos, Sanborn Fire Insurance (Sanborn) maps, and topographic maps show evidence of a former refinery and associated tank farm north of the site.
- The site is bordered to the west by the St. Louis and San Francisco Railroad. West of the railroad tracks are the First Assembly of God Church and the associated pastor's residence.

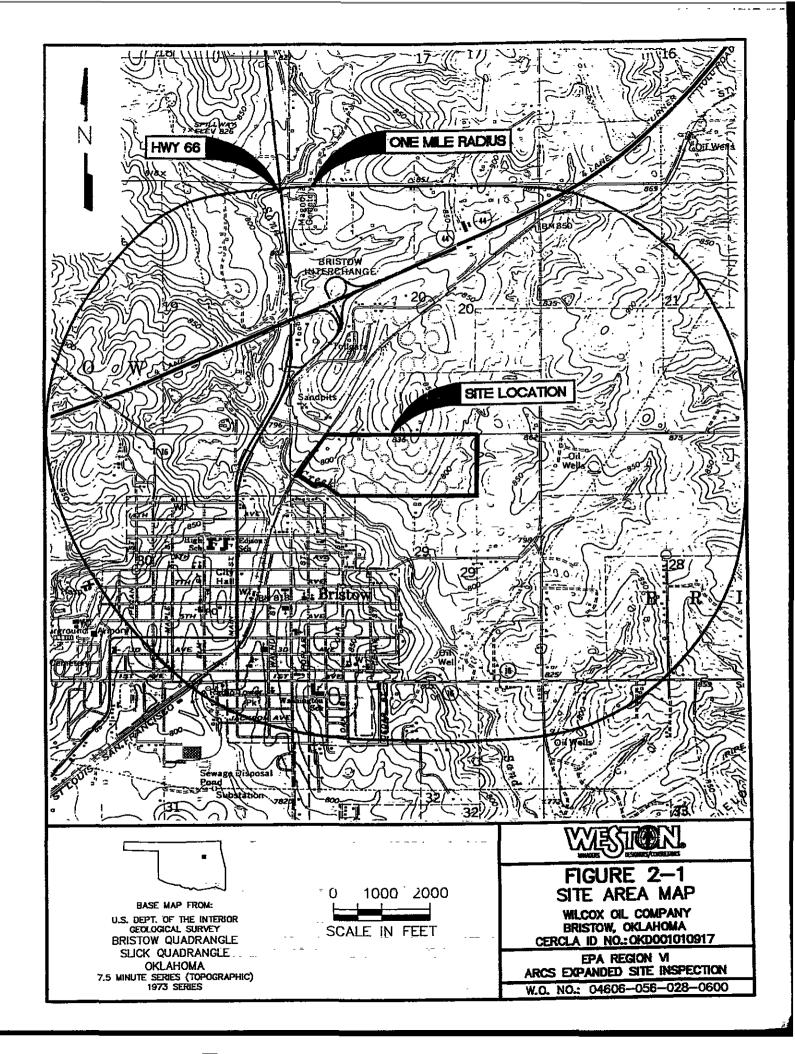
Because the site is in a former oil field, alternative source sites that may be contributing a release of hazardous substances similar to those found at the Wilcox site were identified. Alternative sources of hazardous substances include former refineries located west and north of the site. Little is known about the dates of operation of these refineries. Sanborn maps from 1915 and 1920 show that the property west of the site was occupied by Continental Refining Company, while property north of the site was occupied by Indiahoma Refining Company (Reference 11). A 1923 Sanborn map shows properties immediately west and northwest of the site occupied by the Lorraine Refining Company. West of the Lorraine Refinery and east of State Highway 66 is Roland Refining Company. The 1961 Sanborn map identifies the entire area west of the site as the "former location of Producers Oil Co, Oil Refinery." A Creek County Tax Assessor ownership map (unknown date) shows areas to the north owned by Ohio Oil (Reference 12). A historic aerial photo from 1956 shows refinery and tank farm areas to the north and west of the Wilcox facility vacant (Reference 6). These refineries are reportedly being investigated as separate sites by ODEQ.

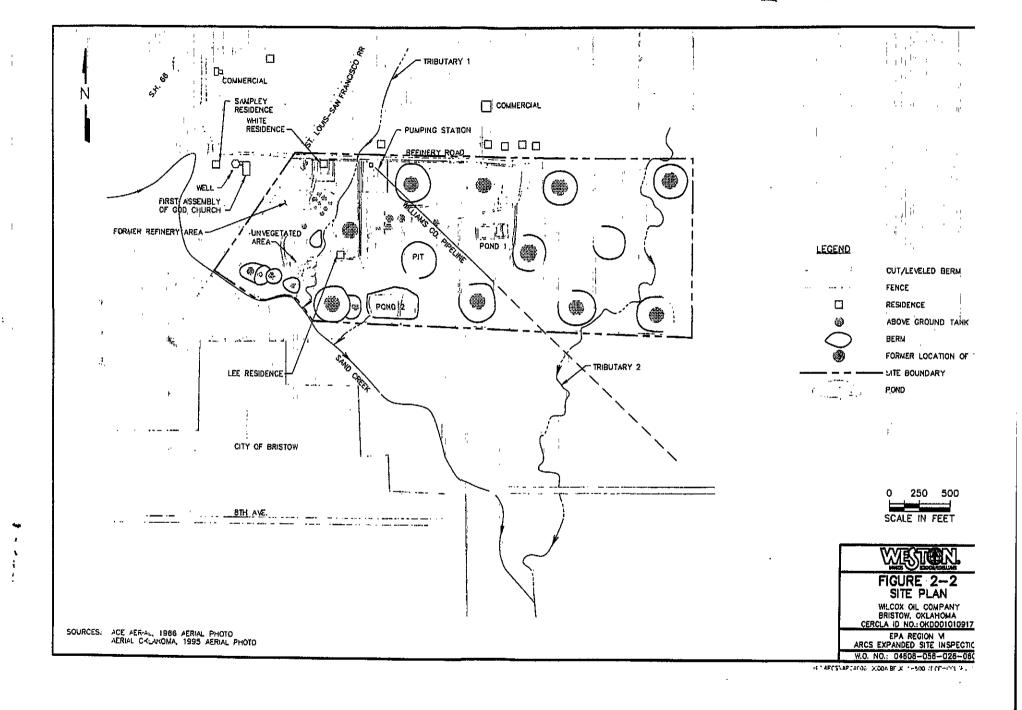
2.2 SUMMARY OF SITE CONCERNS

Possible concerns associated with the sources at the site and the migration of, or exposure to, site-attributable hazardous substances through the groundwater, surface water, soil exposure, and air pathways include the following:

- The presence of hazardous substances at the site is of concern. A discussion of the
 waste characteristics of the sources sampled during the ESI is provided in Section 4 of
 this report.
- A release to groundwater is of major concern because sources at the site have no groundwater containment features. The site overlies an unconfined aquifer that private residences north of the site use as a water source. In addition, the site may overlie a recharge zone to another aquifer that is used for public supply.
- A release to surface water is of major concern because of the proximity to surface
 water bodies and the lack of containment structures around potential waste sources.
 Wetland frontages occur in the downstream segments of Sand Creek and the Little
 Deep Fork Creek. Limited recreational fishing occurs in Sand Creek and the Little
 Deep Fork Creek.

- A release from the soil exposure pathway is of concern. Suspected areas of soil contamination are near residences. However, on-site sources occur within fenced sections of private properties and the nearby population is relatively small.
- A release to air is of some concern because of the potential for soil contamination at the site. Although a resident population has been established for the site, the nearby population is small.





SECTION 3 SAMPLE COLLECTION AND ANALYSIS

Sample collection and analysis are summarized in this section of the report. The related analytical results applicable to the evaluation of on-site sources and of the migration and exposure pathways are summarized in the subsequent sections of this report.

3.1 SAMPLE COLLECTION

In general accordance with the objectives of the ESI, WESTON implemented a sampling strategy primarily aimed at documenting the presence and migration of hazardous substances at the Wilcox site. WESTON collected samples from on- and off-site locations from 18 November to 20 November 1996. At the request of EPA, WESTON did not collect proposed samples from properties north of the Refinery Road, where there is evidence that other refineries once existed. These other refineries are reportedly being investigated as separate sites by ODEQ. In addition, two proposed soil samples (SS-09 and SS-10) were not collected because access could not be obtained to the residential properties where these samples were to be collected. WESTON completed the ESI sampling activities in general accordance with the site-specific TWP and HASP, as well as the other documents listed in Subsection 2.1.3.

WESTON collected a total of 19 samples to document and characterize sources. These samples included 8 high-concentration waste samples (WS-01 through WS-08) and 8 low-concentration soil samples (SS-04 through SS-08, SS-11 through SS-13). Three samples (WS-06, SS-08, SS-13) were collected as field duplicate samples for quality assurance/quality control (QA/QC) purposes. In addition, three soil samples (SS-01, SS-02, SS-03) were collected from off-site locations to characterize background concentrations in soils. All samples were collected from 0 to 6 inches below ground surface (bgs); all residential soil samples were collected from the resident's property and within 200 feet of the residence.

WESTON also collected 10 sediment samples (SED-01 through SED-10) from surface water bodies to determine if a release of hazardous substances from sources at the site has occurred. Sediment sample results are discussed in Section 6, Surface Water Pathway.

3.2 ESI SAMPLE LABORATORY ANALYSIS

WESTON shipped the ESI inorganic samples to ARI Laboratories in Seattle, Washington, by Federal Express Priority Overnight Service. Samples requiring organic analyses were delivered to AATS Laboratory in Broken Arrow, Oklahoma. Waste samples requiring high-concentration analyses were sent to WESTON Environmental Metrics, Inc. (EMI) laboratories in University Park, Illinois. Contract Laboratory Program (CLP) data package excerpts from the laboratory data packages prepared by these laboratories are provided in Appendix B. A data validation review of the CLP laboratory analytical data was performed by the EPA Environmental Services Assistance Team (ESAT) in Houston, Texas. The ESAT data reviewer's comments are also included in Appendix B.

All ESI samples, with the exception of the waste samples collected on 20 November 1996, were analyzed for the following parameters:

- Target Compound List (TCL) volatile organic compounds (VOCs).
- TCL semivolatile base, neutral, and acid extractable compounds (BNAs).
- TCL pesticides and polychlorinated biphenyls (PCBs).
- Target Analyte List (TAL) inorganic constituents (metals and cyanide).

Waste samples collected on 20 November 1996 were analyzed for TCL VOCs, TCL BNAs, TAL inorganics, and total petroleum hydrocarbons (TPH) constituents, as requested by EPA.

Sample stations, descriptions, and rationales are summarized in Table 3-1. On-site soil, sediment, and surface water sample locations are shown in Figure 3-1, area sample locations are shown in Figure 3-2.

Analytical results of all samples collected during this ESI are provided in Appendix C, Tables C-1 through C-24. The Target Compound List (TCL) for organic compounds and Target Analyte List for inorganic constituents (TAL) for the above parameters are presented in Tables D-1 and D-2 in Appendix D.

3.3 DATA VALIDATION

The EPA Region 6 ESAT in Houston, Texas, performed data validation for the ESI analytical data packages prepared by the CLP laboratories. The validators reviewed the data packages to verify that they meet the EPA technical requirements and QA/QC guidelines established in the EPA CLP Scope of Work (SOW) for the analyses. The validators reviewed the data packages for the following items:

- The sample holding times were reviewed to verify that the ESI samples were analyzed within contractual and technical holding time limits.
- The instrument calibrations were reviewed to verify that the calibration for target compounds met contractual OC criteria.
- Analyses were performed on method blanks, and these results were reviewed to locate potential bias.
- Surrogate recoveries were reviewed to verify that recoveries were within contractual requirements.
- Matrix spike recoveries were reviewed to verify that method recoveries were within acceptable QC limits and to determine if biases in the sample results were possible.
- Duplicate results were reviewed to verify that laboratory precision was within technical QC limits.
- The data generated by analyses outside of QC tolerances were evaluated for potential bias in the results (i.e., the reported concentrations are lower or higher than the actual

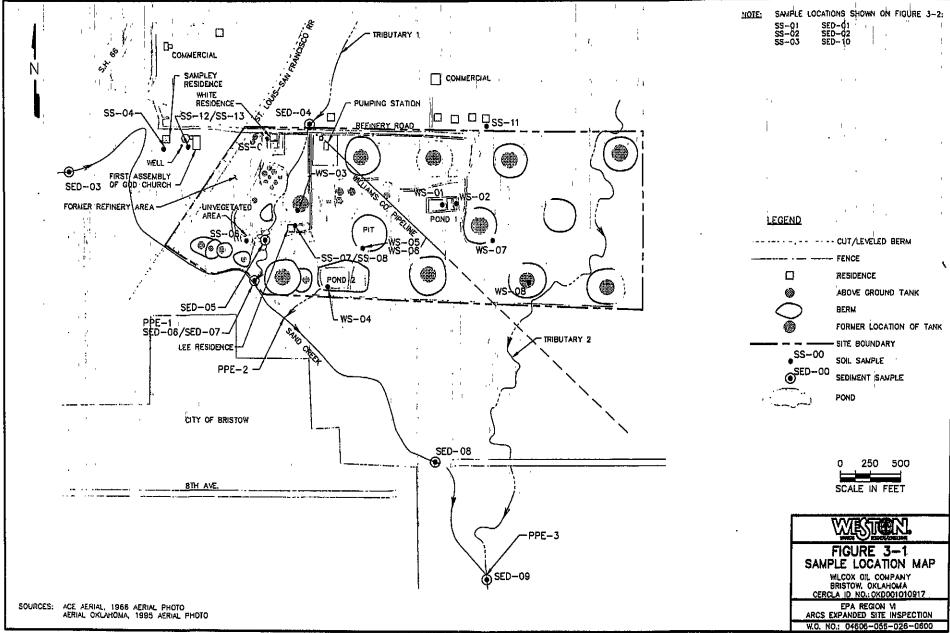
concentrations for the sample). Potentially biased data have been qualified as estimated and are J-flagged. A "^" indicates a high biased result, while a "v" indicates a low biased result.

3.4 <u>DATA USABILITY</u>

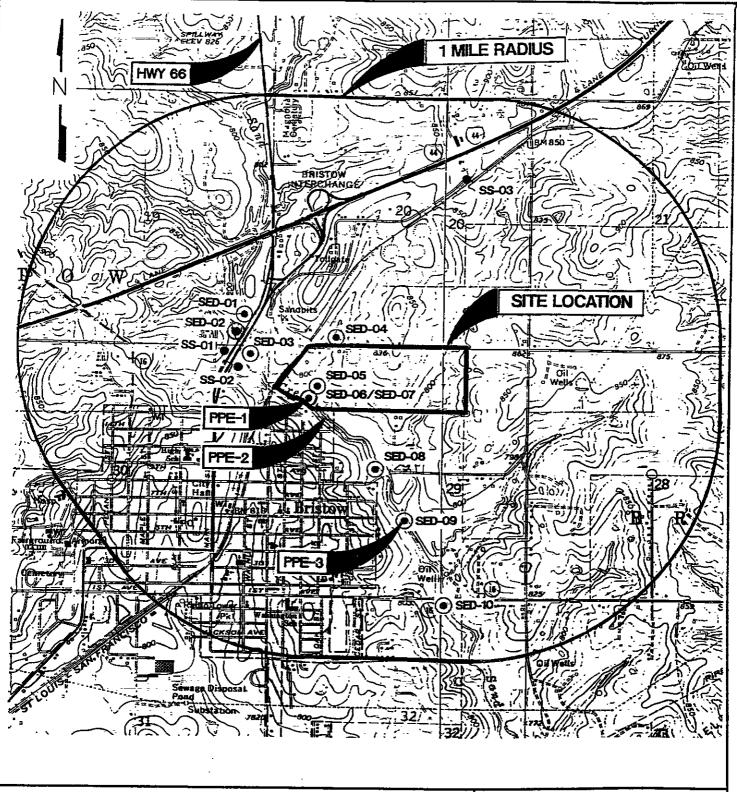
In light of potential QC issues raised in the validation reports, WESTON evaluated the data to verify their suitability for developing and meeting the objectives of the ESI.

Review of the data validation reports indicate that most of the ESI data for site-attributable constituents were generated within CLP-allowable analytical QC tolerances. For the data generated outside of QC limits, the reported data quality issues were minor and do not affect overall data usability. The usability of the data was evaluated by WESTQN as follows:

- The data generated by analyses within the CLP contract required laboratory QC limits were considered unbiased and have been used in the ESI without qualification. This includes all data reported to be acceptable by the data validators. Most data for site-related constituents falls into this category.
- Some data were determined to be biased by ESAT. Biased data were used without additional qualification. Data that are J-flagged without a high or low bias qualifier are considered estimated with an unknown bias.
- Based on historical site activities and the results of ESI sampling, pesticides and
 inorganic constituents detected in some of the samples do not appear to be attributable
 to the site and were qualified by WESTON as "NA" (NA = Not Attributable).
- A qualifier was added by WESTON to results below the laboratory sample quantitation limit (BSQL).



H NARCSNARO4606 CEDIA BE JC 1-500 (PCP-COLOR) 3 24-97





BASE MAP FROM:

U.S. DEPT. OF THE INTERIOR GEOLOGICAL SURVEY ERISTON_CUADRANGE SLOCK TOWADRANGE OKLIAHOMA

7.5 MINUTE SERIES (TOPOGRAPHIC) 1973 SERIES

LEGEND

SED-01 SEDIMENT SAMPLE L'OCATION

SS-01 SAMPLE LOCATION

0 1000 2000 SCALE IN FEET

WEST ON

FIGURE 3-2 AREA SAMPLE LOCATION

MAP
WILCOX OIL COMPANY
BRISTOW, OKLAHOMA
CERCLA ID NO.: OKDO01010917

EPA REGION VI ARCS EXPANDED SITE INSPECTION W.O. NO.: 04606-056-026-0600

Table 3-1
Wilcox Oil Company (CERCLIS ID OKD0001010917)
Sampling Station Descriptions and Rationales

	4	<u></u>	
Station Identification/Type	Description	Rationale	Sample Identification/QC Type
SED-01 Background	Low concentration sediment sample collected from Sand Creek, west of S.H. 66 and upstream of the PPE.	To document a background levels of constituents in the surface water pathway.	SED-01 Normal
SED-02 Background	Low concentration sediment sample collected from Sand Creek, west of S.H. 66 and upstream of the PPE.	To document background levels of constituents in the surface water pathway.	SED-02 Normal
SED-03 Characterization			SED-03 Normal
SED-04 Characterization	Low concentration sediment sample collected from Tributary 1, just north of the refinery road.	To determine levels of potential contaminant runoff from former refineries to the north of the site.	SED-04 Normal
SED-05 Characterization	Low concentration sediment sample collected from pond on Tributary 1 (Lee's Pond) behind the Lee residence.	To document a release of site-attributable hazardous constituents to the surface water pathway.	SED-05 Normal
SED-06 Characterization	Low concentration sediment sample collected from Sand Creek, at PPE1.	To document a release of site-attributable hazardous substances to the surface water pathway.	SED-06 Normal
			SED-07 Duplicate
SED-08 Characterization	Low concentration sediment sample collected from Sand Creek, approximately 0.4 mile downstream of PPE1.	To document a release of site-attributable hazardous substances to the surface water pathway.	SED-08 Normal
SED-09 Characterization	Low concentration sediment sample collected from Sand Creek at PPE3, approximately 0.6 mile downstream of the PPE1.	To document a release of site-attributable hazardous substances to the surface water pathway.	SED-09 Normal
SED-10 Characterization	Low concentration sediment sample collected from Sand Creek, approximately 0.4 mile downstream of PPE3.	To document contaminant migration in the surface water pathway.	SED-10 Normai
SS-01 Background	Low concentration soil sample collected from an off-site property east of State Highway 66.	To characterize background levels of constituents in soils.	SS-01 Normal

Table 3-1 (Continued) Wilcox Oil Company (CERCLIS ID OKD0001010917) Sampling Station Descriptions and Rationales

Station Identification/Type	Description	Rationale	Sample Identification/QC Type	
SS-02 Background	Low concentration soil sample collected from an off-site property, west of State Highway 66.	To characterize background levels of constituents in soils.	SS-02 Normal	
		To document the background levels of constituents in soils.	SS-03 Normal	
		To document the presence of hazardous constituents in surface soils.	SS-04 Normal	
SS-05 Low concentration soil sample collected from the yard of the White residence.		To document the presence of hazardous constituents in the surface soils.	SS-05 Normal	
SS-06 Low concentration soil sample collected from bare, unvegetated area in the southern portion of the White's property.		To document the presence of hazardous constituents in surface soils.	SS-06 Normal	
SS-07. Characterization	Low concentration soil sample collected from the yard of the Lee residence.	To document the presence of hazardous constituents in surface soils.	SS-07 Normal SS-08 Duplicate	
SS-11 Characterization	Low concentration soil sample collected from yard of Cheatham residence (off-site).	To determine if hazardous constituents exist in residential surface soils.	SS-11 Normal	
SS-12 Characterization	Low concentration sample collected from yard behind the First Assembly of God church.	To characterize and document the presence of hazardous constituents in on-site soils.	SS-12 Normal	
			SS-13 Duplicate	
WS-01 Characterization	High concentration waste sample collected from western portion of Pond 1.	To characterize and document the presence of hazardous constituents in the pond.	WS-01 Normal	
WS-02 Characterization	High concentration waste sample collected from eastern portion of Pond 1.	To characterize and document the presences of hazardous constituents in the pond.	WS-02 Normal	

Table 3-1 (Continued) Wilcox Oil Company (CERCLIS ID OKD0001010917) Sampling Station Descriptions and Rationales

Station Identification/Type	Description	Rationale	Sample Identification/QC Type
WS-03 Characterization	High concentration waste sample collected from seep located north of the Lee residence.	To characterize hazardous constituents in residential property soils and document an on-site source.	WS-03 Normal
WS-04 Characterization	High concentration waste sample collected from west end of Pond 2.	To characterize and document the presence of hazardous constituents in the pond.	WS-04 Normal
WS-05 Characterization	High concentration waste sample collected from on-site Pit.	To characterize and document the presence of hazardous constituents in the Pit.	WS-05 Normal
			WS-06 Duplicate
WS-07 Characterization	High concentration waste sample collected along the overland flow path downgradient of a tank bottom, near the cut berm.	To characterize and document the presence of hazardous constituents associated with the tank bottom area.	WS-07 Normal
WS-08 Characterization	High concentration waste sample collected from a tank bottom.	To characterize and document the presence of hazardous constituents in the tank bottom area.	WS-08 Normal

SECTION I SOURCE CHARACTERIZATION

The sources of hazardous substances identified at the site are described in this section of the report. Relevant data related to the sources are provided. The related analytical results applicable to the evaluation of the migration and exposure pathways are summarized in the subsequent pathway sections of the report. Potential sources identified and sampled during the ESI include tank bottoms, pits, ponds, and areas of suspected soil contamination.

4.1 SOURCES OF CERCLA HAZARDOUS SUBSTANCES

The contaminants found on site may be directly related to crude oil or petroleum products, in which case they may not be addressable under CERCLA because of the petroleum exclusion provisions contained in the law's definition of hazardous waste. However, waste petroleum products that contain higher concentrations of hazardous substances than the virgin product are not considered to be excluded. Also, certain petroleum refining wastes are defined as Resource Conservation and Recovery Act (RCRA) wastes in 40 Code of Federal Regulations (CFR) 261.31 and are not excluded. These RCRA wastes include American Petroleum Institute (API) separator sludge, leaded tank bottoms, refinery primary oil/water/solids separation sludge, and refinery secondary (emulsified) oil/water solid separation sludge.

4.2 SOURCE DESCRIPTIONS AND ANALYTICAL RESULTS

Sample results from sources are considered significantly above background levels if they exceed three times the maximum background concentration. Samples with concentrations of constituents greater than three times the maximum background levels are provided in Tables 4-1 through 4-8. The source contaminants include semivolatile organic constituents, some volatile organics, and metals such as lead. Contamination at several potential sources has not been documented through sampling, therefore, additional CERCLA-eligible sources may be present on-site. These potential sources include the four ASTs located on the White's property, numerous tank bottom areas, and impoundments. Potential and documented CERCLA-eligible sources at the site are discussed below and are illustrated in Figure 2-2.

4.2.1 Tank Bottoms

Based on the field observations, aerial photographs, and Sanborn maps, at least 11 bermed areas, formerly containing aboveground storage tanks (ASTs), have been identified on-site (References 3, 6, 7, and 11). The ASTs have been cut down and removed, leaving tank residue and bottoms. These areas are shown in Figure 2-2 (Site Plan). Based on aerial photographs, the circular berms measure up to 300 feet in diameter, while the tank bottoms measure up to 150 feet in diameter (Reference 6 and 7). Sanborn maps indicate that tanks in these bermed areas had volumes ranging from 1,000 barrels to 55,000 barrels (Reference 11). Contents listed for the tanks include crude oil, fuel oil, gasoline, napthene, and kerosene. The Sanborn maps also show many of the tanks surrounded by 3- and 4-feet high berms. Almost all of the aboveground tanks have been removed with the exception of four tanks located on the White's property (western portion of the site) (Reference 7). Most of the berms that formerly contained ASTs have been removed. During sampling activities, it was noted that many of these circular areas contained oily, tarry, and black asphalt-like materials.

One of the tank bottom areas is adjacent to the Lee residence. A portion of this area is surrounded by a fence and is covered with grass. Seeps of black material were noted in this area, and one waste sample (WS-03) was collected from a seep during ESI activities. Results for sample WS-03 show elevated concentrations of pyrene (54,000 ug/kg) and TPH (293,000 mg/kg).

WESTON also collected two high-concentration waste samples (WS-07 and WS-08) from tank bottom areas located in the eastern portion of the site (Elias' property). Results for both samples showed high TPH (85,700 mg/kg and 23,200 mg/kg, respectively); however, only the results from WS-08 showed any other constituents greater than three times the background concentration. Results for waste sample WS-08 showed cyanide (0.95 mg/kg), manganese (938 mg/kg), selenium (0.47 mg/kg), silver (0.9 mg/kg), and zinc (160 mg/kg).

Since no other constituents besides TPH were detected above background in WS-07, only the tank bottom areas corresponding to WS-03 and WS-08 are considered CERCLA-eligible sources.

4.2.2 Surface Impoundments

At least four former surface impoundments are located in the central portion of the site (Reference 1). These locations were verified with aerial photographs (References 6 and 7). The total depth and historic use of these ponds and pits is not known.

Pond 1—A 1966 aerial photo shows that Pond 1 measured approximately 250 feet by 100 feet and was divided into three rectangular cells by berms. Currently the pond is backfilled and has no berms. Mr. Elias stated he had the berms leveled and the ponds filled in recently because of safety concerns. Oily seeps were observed in this area during the site reconnaissance and sampling visit. Two waste samples (WS-01 and WS-02) were collected from the seeps in this pond. Organic vapor analyzer (OVA) readings greater than 1,000 units above background were detected in the sample hole for WS-01. Constituents detected in the waste samples that were significantly above background include toluene (270 ug/kg), total xylenes (280 ug/kg), and pyrene (230,000 ug/kg). TPH was detected at 494,000 mg/kg.

Pond 2—Pond 2 measures approximately 400 feet by 250 feet and is divided by a berm into two cells. The berm in the southwest corner of the pond has been cut, and surface water runoff flows through this breach into a flowing drainage channel that empties into Sand Creek at PPE-2. The pond is vegetated with grasses and brush and contained shallow pond water at the time of sampling. One waste sample (WS-04) was collected from the southwestern portion of this pond, near the breached berm. OVA readings were approximately 1 unit above background at the sample location. Constituents detected significantly above background in the waste sample were a large number of inorganics, including lead (47,000 mg/kg) and copper (42.5 mg/kg). TPH was detected at 1,370 mg/kg.

Pit—A 300-feet diameter pit containing black, tarry material was observed during ESI field activities. The southwestern portion of the berm had been cut, and discolored material was noted flowing out of this area. Charred trees and plants were noted in the flow path, possibly indicating a fire had occurred at one time. A waste sample (WS-05) and duplicate waste sample (WS-06) were collected from black material located at the edge of the breached berm. Strong, tar-like odors were noted during sampling, and OVA readings were 60 units above background at the sample location. Both inorganic and

• Lee Residence—Two soil samples (SS-07, SS-08) were collected from the yard of this property, within 35 feet of the house. Soil sample SS-08 was collected as a field duplicate of SS-07. In addition, a waste sample (WS-03) was collected from black material seeping up in the Lee's yard. According to Mrs. Lee, the black material seeps up in several locations in the yard and between the cracks of their driveway. Historic aerial photos show an impoundment-like feature where the Lee's mobile home currently exists (References 6 and 7). A large, aboveground storage tank and associated bermed area appear in aerial photos on the adjacent land north of the Lee residence.

Acetone (48 ug/kg) was detected above background levels in SS-07, but not in SS-08. Results for waste sample WS-03 were discussed previously under the Tank Bottoms subsection and indicate elevated levels of pyrene and TPH.

4.3 SOURCE CHARACTERIZATION CONCLUSIONS

WESTON collected a total of 15 samples (8 high-concentration waste samples plus 7 low-concentration soil samples) to characterize sources at the site. These samples included both characterization and QA/QC samples. Characterization samples collected from sources at the site contain concentrations of a large number of constituents greater than three times background concentrations.

The following conclusions can be drawn from the sample results from the sources:

- Results from soil samples collected from on-site residential yards show elevated concentrations of both organic and inorganic constituents significantly above background levels.
- Results for the waste samples collected from the two tank bottom areas show elevated TPH and other constituents. One tank bottom area showed elevated inorganics, while the other showed elevated pyrene.
- Results for the waste samples collected from the surface impoundments (Ponds 1 and 2, and the Pit) indicate high concentrations of TPH and other constituents.
 Elevated metals were detected in Pond 2 and the Pit. Elevated organics were detected in Pond 1 and the Pit.
- Former containment features (berms) have been cut or leveled for the impoundments and tank bottom areas; thereby facilitating surface migration of contaminants from the sources.

organic constituents were detected at concentrations greater than three times the background concentration. These constituents include copper (100 mg/kg), arsenic (8.7 mg/kg), lead (3,660 mg/kg), mercury (0.11 mg/kg), selenium (0.84 mg/kg), 2-methylnaphthalene (1.4 x 10⁶ ug/kg), phenanthrene (520,000 ug/kg), acetone (2,200 ug/kg), and total xylenes (450 ug/kg).

Lee's Pond—This pond covers approximately 10,000 square feet and is located southwest of the Lee residence. The intermittent creek (Tributary 1) flows through this pond. The pond also receives runoff from the White and Lee properties. During ESI sampling activities, layers of black asphalt-like material were noted on the edge of the pond. One sediment sample (SED-05) was collected from the edge of the pond. Sample results show copper (2.9 mg/kg) and lead (54 mg/kg) significantly above background concentrations.

4.2.3 Contaminated Soils

Soil samples were collected from four residential properties, the church, and from an unvegetated area located on the White's property. See Tables 4-5 through 4-8 for soil sample results greater than three times the background concentrations. Based on analytical results, contaminated soils occur in the following areas:

- Church and Sampley Residence—This area appears to be the location of refinery operations in which storage, processing, loading, and disposal activities have occurred (Reference 1). Since these areas are considered part of the Lorraine Refinery site, they will not be evaluated as sources that are part of the Wilcox site. Church representatives noted that they have frequently encountered old pipelines and other debris when digging on their property (Reference 2). Debris and trash (broken brick, glass, etc.) partially buried in the surface soils of the church property were observed during ESI activities. One soil sample (SS-04) was collected from Pastor Sampley's residential yard; sample results showed lead (116 mg/kg) significantly above background. Two soil samples (SS-12, SS-13) were collected from the yard behind the church. Soil sample SS-13 was collected as a duplicate of sample SS-12. Results for these samples showed lead (260 mg/kg) and mercury (0.09 mg/kg) significantly above background levels.
- White Residence—One soil sample (SS-05) was collected from the White yard, approximately 30 feet west of the residence. A large number of constituents were detected in this sample at concentrations greater than three times the background concentrations. These include lead (369 mg/kg), mercury (0.18 mg/kg), zinc (132 mg/kg), benzo(g,h,i)perylene (440 ug/kg), chrysene (690 ug/kg), phenanthrene (790 ug/kg) and pyrene (560 ug/kg) (see Table 4-8).
- Unvegetated Area—A bare, unvegetated area of soil, extending approximately 10,000 square feet, exists in the southern part of the White's property (southwest portion of the site). This area was covered by silty sand and a white, salt-like substance. Former use of this area is unknown; aerial photographs from the 1960s, 1970s, 1980s and 1990s show this area as vacant and barren (References 6 and 7). One soil sample (SS-06) was collected from this area. Results from this sample show copper (127 mg/kg) and lead (55,049 mg/kg) significantly above background concentrations.

TABLE 4-1
Wilcox Oil Company (CERCLIS ID OKD0001010917)
Waste Sampling Results Above Background Concentrations

	Backg Concer	Characterization Sample Concentrations						
Analyte	Maximum Background	3 Times Maximum Background	Station Sample Date QC Type Depth	WS-04 WS-04 11/20/96 Normal 0.0'-0.5'	WS-05 WS-05 11/20/96 Normal 0.0'-0.5'	WS-05 WS-06 11/20/96 Duplicate 0.0'-0.5'	WS-08 WS-08 11/20/96 Normal 0.0'-0.5'	Left Blank On Purpose
Metals							1 	
Aluminum (mg/kg)	5580	16740		22100	1070	957	9720	1
Antimony (mg/kg)	ND	4044444		7.7	4 υ	3.6 U	4.7 U	
Arsenic (mg/kg)	1.5	4.5		6.5	8.7	2.6	2.8	
Barium (mg/kg)	58.2	174.6		191	44.2	47.4	129	
Beryllium (mg/kg)	0.28	0.84		1.2	0.11	0.1	0.58	
Copper (mg/kg)	5.3	15.9		42.5 .	100	74.3	13.9	
Cyanide (mg/kg)	ND			2	0.7 U	0.44 บ	0.95	
Lead (mg/kg)	26.3	78.9		47000 .	3660	2260	77.8	
Magnesium (mg/kg)	744	2232		5080	598	290	999	
Manganese (mg/kg)	233	699		701	86.4	36.7	938	
Mercury (mg/kg)	ND	P0111110		0.07 U	0.11	0.05 υ	0.06 υ	
Potassium (mg/kg)	961	2883		3300	293	314	1350	
Selenium (mg/kg)	ND			1 υ	0.84	0.44	0.47	
Silver (mg/kg)	ND	##*****		2	0.67	0.92	0.9	
Vanadium (mg/kg)	11.2	33.6		38.1	10.9	9.7	26,3	
Zinc (mg/kg)	34.8	104.4		127	66.4	51.7	160	T

U Not detected at reported quantitation limit.

Shaded Values Exceed 3 Times Maximum Background Concentrations for Constituents Attributable to the Site.

TABLE 4-2
Wilcox Oil Company (CERCLIS ID OKD0001010917)
Waste Sampling Results Above Background Concentrations

	•	round itration	Characterization Sample Concentrations					
Analyte	Maximum Background	3 Times Maximum Background	Station Sample Date QC Type Depth	WS-02 WS-02 11/20/96 Normal 0.0'-0.5'	V/S-05 WS-05 11/20/96 Normal 0.0'-0.5'	WS-05 WS-06 11/20/96 Duplicate 0.0'-0.5'	Left Blank On Purpose	Left Blank On Purpose
Volatile Organics					:			!·
Acetone (ug/kg)	ND			130 υ	2200	1000		T
Toluene (ug/kg)	ND			270	45 J C-BSQL	64 J C-BSQL		
Xylenes (total) (ug/kg)	ND			280	380	450		

U Not detected at reported quantitation limit.

J Estimated value.

C-BSQL Below Sample Quantitation Limit

TABLE 4-3
Wilcox Oil Company (CERCLIS ID OKD0001010917)
Waste Sampling Results Above Background Concentrations

	Background Concentration		Characterization Sample Concentrations						
Analyte	Maximum Background	3 Times Maximum Background	11 1		WS-03 WS-03 11/20/96 Normal 0.0'-0.5'	WS-05 WS-05 11/20/96 Normal 0.0'-0.5'	WS-05 WS-06 11/20/96 Duplicate 0.0'-0.5'	Left Blank On · Purpose	
Semi-Volatile Organics									
2-Methylnaphthalene (ug/kg)	ND			64000 U	49000 U	1.4E6	760000		
Phenanthrene (ug/kg)	34	102		27000 J C-BSQL	49000 U	520000	370000		
Pyrene (ug/kg)	62	186		230000	54000	230000 J C-BSQL	260000 J C-BSQL		

U Not detected at reported quantitation limit.

J Estimated value.

C-BSQL Below Sample Quantitation Limit

TABLE 4-4
Wilcox Oil Company (CERCLIS ID OKD0001010917)
Waste Sampling TPH Results Summary of Detections

		Characterization Sample Concentrations							
	WS-01 WS-01 Normal 0.0'-0.5'	WS-02 WS-02 Normal 0.0'-0.5'	WS-03 WS-03 Normal 0.0'-0.5'	WS-04 WS-04 Normal 0.0'-0.5'	WS-05 WS-05 Normal 0.0'-0.5'	WS-05 WS-06 Duplicate 0.0'-0.5'			
Analyte									
Total Petroleum Hydrocarbons									
Total Petroleum Hydrocarbons (mg/kg)	427000	494000	293000	1370	875000	378000			

TABLE 4-4 (Continued) Wilcox Oil Company (CERCLIS ID OKD0001010917) Waste Sampling TPH Results Summary of Detections

	Characterization Sample Concentrations							
Analyte	WS-07 WS-07 Normal 0.0'-0.5'	WS-08 WS-08 Normal 0.0'-0.5'	Left Blank On Purpose	Left Blank On Purpose	Left Blank On Purpose	Left Blank On Purpose		
Total Petroleum Hydrocarbons				<u> </u>	<u> </u>			
Total Petroleum Hydrocarbons (mg/kg)	85700	23200			<u> </u>	T*****		

TABLE 4-5
Wilcox Oil Company (CERCLIS ID OKD0001010917)
Soil Sampling Results Above Background Concentrations

	"	Background Concentration		Characterization Sample Concentrations						
Analyte	Maximum Background	3 Times Maximum Background	Station Sample Date QC Type Depth	SS-04 SS-04 11/18/96 Normal 0.0'-0.5'	SS-05 SS-05 11/18/96 Normal 0.0'-0.5'	SS-06 SS-06 11/18/96 Normal 0.0'-0.5'	SS-12 SS-12 11/18/96 Normal 0.0'-0.5'	SS-12 SS-13 11/18/96 Duplicate 0.0'-0.5'		
Metals								<u> </u>		
Copper (mg/kg)	5.3	15.9		4.5 L	11.4	127	10.6	11.4		
Lead (mg/kg)	26.3	78.9		116 j	369 ј	55049 J	251 ј	260 J		
Mercury (mg/kg)	ND			0.05 U	0.18	0.06 บ	0.08 L	0.09 L		
Zinc (mg/kg)	34.8	104.4		36.3	132	25.7	70.1	69.7		

L Reported concentration is between the IDL and the CRDL.

J Estimated value.

U Not detected at reported quantitation limit.

TABLE 4-6
Wilcox Oil Company (CERCLIS ID OKD0001010917)
Soil Sampling Results Above Background Concentrations

	Background Concentration		Characterization Sample Concentrations					
Analyte	Maximum Background	3 Times Maximum Background	Station Sample Date QC Type Depth	SS-07 SS-07 11/19/96 Normal 0.0'-0.5'	Left Blank On Purpose	Left lank On Purpose	Left Blank On Purpose	Left Blank On Purpose
Volatile Organics								******
Acetone (ug/kg)	ND			48 J]

J Estimated value.

Shaded Values Exceed 3 Times Maximum Background Concentrations for Constituents Attributable to the Site.

TABLE 4-7
Wilcox Oil Company (CERCLIS ID OKD0001010917)
Soil Sampling Results Above Background Concentrations

	n	Background Concentration		Characterization Sample Concentrations					
Analyte	Maximum Background	3 Times Maximum Background	Station Sample Date QC Type Depth	SS-05 SS-05 11/18/96 Normal 0.0'-0.5'	Left Blank On Purpose	Left Blank On Purpose	Left Blank On Purpose	Left Blank On Purpose	
Semi-Volatile Organics									
Benzo(g,h,i)perylene (ug/kg)	ND	272222		440 J					
Chrysene (ug/kg)	50	150		690 3					
Phenanthrene (ug/kg)	34	102		790 j					
Pyrene (ug/kg)	62	186		560 J					

J Estimated value.

WILCOX OIL COMPANY BRISTOW, CREEK COUNTY, OK EPA CERCLA ID NO. OKD001010917

TABLE 4-8 SUMMARY OF SOURCE AREAS

SOURCE TYPE	SOURCE NAME	AREA (ft²)	CONTAMINANTS
Surface Impoundment	Pond 1	25,000	toluene, xylene, pyrene, TPH
Surface Impoundment	Pond 2	100,000	heavy metals, TPH
Surface Impoundment	Pit	70,686	heavy metals, acetone, xylenes, 2-methylnaphthalene, phenanthrene, TPH
Surface Impoundment	Lee's Pond	10,000	copper, lead
Contaminated Soil	Unvegetated Area	10,000	copper, lead
Contaminated Soil	Lee Residence	22,500	acetone
Contaminated Soil	White Residence	unknown	lead, mercury, zinc, semivolatiles
Contaminated Soil	Tank Bottom (Elias's Property)	12,272	cyanide, manganese, selenium, silver, zinc, TPH
Contaminated Soil	Tank Bottom (Lee's Residence)	12,272	pyrene, TPH

SECTION 5 GROUNDWATER PATHWAY

A discussion of the groundwater pathway, one of four pathways of potential hazardous waste migration assessed in this report, is provided in this section. The discussion focuses on the aquifer characteristics of the region, the likelihood of release of hazardous substances to groundwater, and the potential targets of hazardous waste migration through the groundwater pathway.

5.1 HYDROGEOLOGIC DESCRIPTION

Regionally, the site is located on an outcrop of the Pennsylvanian-age Barnsdall Formation (Reference 1). Pennsylvanian strata in the area strike north-south, and regional dip is to the west at approximately 30 to 90 feet per mile. Progressively younger strata are encountered from east to west.

The Barnsdall Formation is heterogeneous in character and contains sandstone interbedded with silty and sandy shales (Reference 1). It is capable of producing water and is a bedrock aquifer. However, it is not considered to be a Principal Ground Water Resource by the Oklahoma State Department of Health. The Barnsdall aquifer is unconfined with a shallow water table and is approximately 200 feet thick in the area of the site. The Barnsdall aquifer is used primarily by private wells in the area as a source of drinking water.

The other aquifer in the site area is the Vamoosa-Ada aquifer, located west of the site. Most nearby public supply wells produce from this aquifer. This aquifer includes (from youngest to oldest) the following Pennsylvanian-age formations (Reference 1):

- Lower Vanoss
- Ada
- Vamoosa
- Tallant
- Uppermost Barnsdall

The Vamoosa-Ada strata crop out in the western one-third to one-half of Creek County and are predominantly composed of red and brown coarse- to fine-grain, well-sorted sandstones interbedded with dark red sandy to silty shale (Reference 1). The Tallant Formation consists of 10 to 60 feet of fine- to medium-grained sandstone, overlain by 25 to 65 feet of shale (Reference 13). Total thickness of the Tallant Formation ranges from 0 to 100 feet. Maps from the Oklahoma State Department of Health indicate that the site is located within a potential recharge area for the Vamoosa-Ada aquifer (Reference 13). However, the Tallant Formation may act as a confining unit between the uppermost Barnsdall and the overlying Vamoosa-Ada aquifer, west of the site (Reference 13).

5.2 LIKELIHOOD OF RELEASE

Important factors related to the likelihood of a release from source hazardous substances at the site to groundwater are presented in this section. Relevant analytical data for the pathway are provided.

5.2.1 Depth to Groundwater

The depth to the shallowest water-bearing unit is reportedly less than 25 feet (Reference 1). However, a depth of 60 feet was reported for the first water-saturated sandstone in a domestic water well located less than ¼ mile north of the site.

5.2.2 Depth of Contamination

Based on samples collected from the on-site sources as part of the ESI field activities, the maximum depth of known contamination is ½ foot bgs. Because subsurface sampling was not conducted as part of this ESI, the actual depth of contamination is not known.

5.2.3 Net Precipitation

Net precipitation is equivalent to total annual precipitation less potential evapotranspiration. The net precipitation for the vicinity of the site using the Thornthwaite method is approximately 8.91 inches per year (Reference 14).

5.2.4 Thickness of Impermeable Layers

An impermeable confining layer is not present between sources at the site and groundwater in the Barnsdall formation (Reference 1). Nor has it been demonstrated that there is an impermeable layer between the Barnsdall and younger formations in the Vamoosa-Ada aquifer.

5.2.5 Hydraulic Conductivity of Impermeable Laver

An impermeable layer does not exist between the surface and groundwater; therefore, a hydraulic conductivity value cannot be assigned.

5.2.6 Analytical Results from Previous Investigations

No previous groundwater analytical results from previous investigations are known to exist.

5.2.7 ESI Groundwater Sampling and Analytical Results

No groundwater sampling was conducted as part of this ESI.

5.3 GROUNDWATER PATHWAY TARGETS

The potential receptors, or targets, of the groundwater pathway include the population and resources that rely on local aquifers as a source of water supply. The targets identified for the groundwater pathway are discussed in the following sections.

5.3.1 Nearest Well

The nearest identified active well to the site is a private well, located ¼ mile north of the site (Reference 1). It is 230 feet deep and produces water from sandstones in the lower part of the Barnsdall Formation. The nearest active public supply well is located almost I mile southwest of the site and produces from the Vamoosa-Ada aquifer. It should be noted that these wells were not sampled during this ESI; it is WESTON's understanding that groundwater sampling will be conducted as part of other site investigations led by ODEQ.

Water wells on the First Assembly of God Church property and on the White's property have been abandoned because of oil contamination (Reference 1). The White well is approximately 200 feet deep and is plugged. Oily contamination reportedly came from perforations in shallow sand intervals. The church well is 110 feet deep, but is screened at 40 feet in the shallow water zone. The Whites currently have a water line from the City of Bristow, and they sell water to the Sampley residence, Lee residence, and First Assembly of God Church (References 1 and 3).

5.3.2 Other Nearby Wells

There are 8 active drinking water wells for the City of Bristow located within 4 miles of the site (Reference 1). According to information provided by the ODEQ Water Quality Division, these wells produce from the Vamoosa and Vamoosa-Ada aquifers (Reference 15). In addition, a public supply well that serves 50 residents of the Evergreen Trailer Park is located within a 1- to 2-mile radius of the site. The nearest active public supply well (City of Bristow Well #14) is approximately 1 mile southwest of the site. Residences to the north of the refinery road reportedly receive drinking water from private wells, but the exact number and locations of these wells is unknown (Reference 2). A summary by distance interval of nearby identified active water wells is provided in Table 5-1.

It should be noted that a public supply well (City of Bristow Well #15) located approximately ½ mile southwest of the site was plugged and abandoned because of diesel contamination following a train derailment (Reference 15).

5.3.3 Well Head Protection Areas

No well head protection areas exist within a 4-mile radius of the site (Reference 1).

5.3.4 Groundwater Resources

Resources associated with the groundwater pathway may include irrigation, watering of commercial livestock, commercial food preparation, commercial aquaculture, and water recreation.

Groundwater within the vicinity of the site is used for irrigation and watering of commercial livestock (Reference 1).

5.4 GROUNDWATER PATHWAY CONCLUSIONS

A release of site-attributable contamination to the groundwater pathway is of major concern because of the following:

- The site is located on an outcrop of the Barnsdall Formation. The Barnsdall aquifer is used by private wells in the area. Oily contamination has been observed in the shallow groundwater zone in abandoned on-site residential wells. Most of the known active private wells are located at distances greater than 1 mile and topographically upgradient from the site. However, there may be unidentified private wells in the area.
- The site is located in a potential recharge zone for the Vamoosa-Ada aquifer, the principle aquifer for the City of Bristow public supply wells. However, the Tarrant formation may act as an upper confining unit between the Barnsdall and Vamoosa-Ada aquifers.
- Attribution of contamination to the site may be difficult because of potential contamination associated with the surrounding oil refineries to the north and west.
 In addition, diesel contamination of groundwater resulting from a train derailment occurs between the site and public supply wells.

WESTON did not perform groundwater sampling as part of this ESI at the request of EPA. It is WESTON's understanding that area groundwater sampling will be performed by ODEQ as part of investigations at adjacent refinery sites.

WILCOX OIL COMPANY BRISTOW, CREEK COUNTY, OK EPA CERCLA ID NO. OKD001010917

TABLE 5-1 SUMMARY OF POPULATION SERVED BY ACTIVE WELLS

DISTANCE FROM SITE (miles)	NUMBER OF PRIVATE WELLS	NUMBER OF PUBLIC WELLS	ESTIMATED POPULATION ¹
0 - 1/4	1	0_	3
1/4 - 1/2	0	0	0
1/2 - 1	4	1	176
1 - 2	. 25	8	4,368
2 - 3	20	0	54
3 - 4	29	0	78
Total	79	9	4,679

Notes:

1. Population has been rounded to nearest whole number.

Source: ODEQ 1994 PA, Reference 1.

SURFACE WATER PATHWAY

Surface water is the second of four pathways of potential hazardous waste migration assessed for the site. A discussion of the types of surface water draining the site, the probable point of entry (PPE) for a hazardous substance from the site to enter surface water, the likelihood of a release, and the potential targets of the pathway are discussed in this section.

6.1 HYDROLOGIC SETTING

Regionally, surface water from the Wilcox site flows into the Little Deep Fork drainage basin.

Surface water at the site flows through an overland flow segment, enters the surface water at the PPE in Sand Creek, and flows downstream to the Little Deep Fork Creek. These segments of the surface water pathway are discussed in the following sections.

6.1.1 Overland Flow Segment

Based on available information and USGS topographic maps, drainage from the site flows south and east into two intermittent creeks. The western intermittent creek (Tributary 1) flows from the north, across the White's property and through the Lee's pond. The creek then enters Sand Creek approximately 100 feet south of the site. This creek receives runoff from the north, from the former Wilcox refinery, and from western portions of the former tank farm. The eastern intermittent creek (Tributary 2) receives runoff from the eastern portions of the tank farm. This creek flows approximately 0.4 mile south before reaching Sand Creek. Additionally, there is a small intermittent drainage that connects a pond in the southcentral area of the site with Sand Creek.

6.1.2 Probable Point of Entry

Three PPEs for a release of hazardous substances from the site into perennial surface water bodies have been identified. These PPEs (PPE-1, PPE-2, and PPE-3) occur where on-site intermittent creek flow into Sand Creek. These locations are identified in Figure 6-1.

6.1.3 Surface Water Flow Path

Runoff from the Wilcox site flows south into Sand Creek through PPEs 1, 2, and 3 (References 1 and 2). Sand Creek flows southeast and discharges into the Little Deep Fork Creek approximately 3.5 miles downstream of the PPE-1 (Reference 16). Flow continues in Little Deep Fork Creek for the remaining 11.5 miles of the site surface water pathway.

The surface water pathway is illustrated in Figure 6-1; stream segments and streamflow data are summarized in Table 6-1.

6.2 LIKELIHOOD OF RELEASE

Important factors related to the likelihood of a release from a source of hazardous substances at the site to surface water are presented in the following section. Relevant analytical data for the surface water pathway are provided as evidence of a release.

6.2.1 Distance to Surface Water

Based on observations made during WESTON's field sampling activities, the shortest distance from a known or potential source of hazardous substances at the site to surface water is approximately 400 feet. This distance was determined from a topographic map by measuring from the unvegetated area on the White's property to Sand Creek through the intermittent creek (Reference 3). The distance measured between Pond 2 and Sand Creek is also approximately 400 feet.

6.2.2 Flood Frequency

According to flood hazard maps obtained from the Federal Emergency Management Agency (FEMA), portions of the site are in the 100-year flood zone (Reference 17).

6.2.3 2-Year, 24-Hour Rainfall

The 2-year, 24-hour rainfall for the area of the site is approximately 4.25 inches (Reference 18).

6.2.4 Flood Containment

Based on a review of topographic maps and aerial photographs, in addition to observations made during WESTON's field sampling activities, sources at the site have either limited or no containment features for floods. Although berms surround some of the sources at the site, many of the original berms have either been leveled or cut to allow drainage from the sources to run off.

6.2.5 Analytical Results from Previous Investigations

No analytical results exist from previous investigations.

6.2.6 ESI Sediment Sampling and Analytical Results

WESTON collected 10 sediment samples (SED-01 through SED-10) from surface water bodies receiving drainage from the site in an effort to determine if a release of hazardous substances from sources at the site has occurred. One of these samples (SED-07) was a duplicate sample collected for QA/QC purposes. WESTON collected two background samples (SED-01, SED-02) from locations on Sand Creek upstream of the PPEs. Two samples (SED-03, SED-04) were collected to evaluate potential contaminated runoff coming from the former refineries located west and north of the site. Sediment sample SED-03 was collected from Sand Creek, just east of the S.H. 66 bridge, where runoff from the former Lorraine refinery would enter the creek. Sediment sample SED-04 was collected from

Tributary 1, just north of the refinery road, where runoff from refineries to the north would enter the site. In all cases, the sediment samples were collected from depths ranging from 0 to 6 inches bgs.

Laboratory analytical results for the sediment samples document a release of copper and lead from the site to Sand Creek. These constituents were detected on site, at and downstream of the PPEs in Sand Creek. Sediment sample analytical results significantly above background concentrations are presented in Table 6-2.

6.3 SURFACE WATER PATHWAY TARGETS

The potential targets of the surface water pathway include the population relying on surface water downstream of the PPE as a source of drinking water, as well as downstream fisheries, sensitive environments, and surface water resources. The targets of the surface water pathway are discussed in the following subsections.

6.3.1 Drinking Water Intakes

According to a representative with the ODEQ Water Quality Division, no drinking water intakes exist in the watershed located in Creek County (which includes Sand Creek and Little Deep Fork Creek) (Reference 19). All drinking water is obtained from groundwater sources.

6.3.2 Wetlands and Other Sensitive Environments

Surface water pathway targets include fisheries, drinking water intakes, sensitive environments, and resources that rely on surface water.

Habitats for endangered and threatened species are known to occur in Creek County; however, no sightings or habitats for those species have been observed or reported for the site (Reference 1). A list of endangered and threatened species are in Table 6-3.

WESTON obtained U.S. Fish and Wildlife National Wetlands Inventory (NWI) maps in order to identify wetland areas along the surface water pathway (Reference 20). According to the wetlands maps, small wetland frontages are present along the surface water pathway downstream of the site. The wetlands are summarized in Table 6-4.

6.3.3 Fisheries

According to an official with the Oklahoma Fish and Wildlife office, Sand Creek and Little Deep Fork Creek may be used for limited private fishing (Reference 21). These creeks may therefore be considered fisheries. According to the State of Oklahoma, Sand Creek is considered to be in the "habitat limited aquatic community" subcategory of the fish and wildlife propagation beneficial use category and within the primary body contact subcategory for recreational beneficial use category (Reference 1). The Little Deep Fork Creek is placed in the "warm water aquatic community" subcategory of the fish and wildlife propagation beneficial use and within the "primary body contact" subcategory for recreational beneficial use.

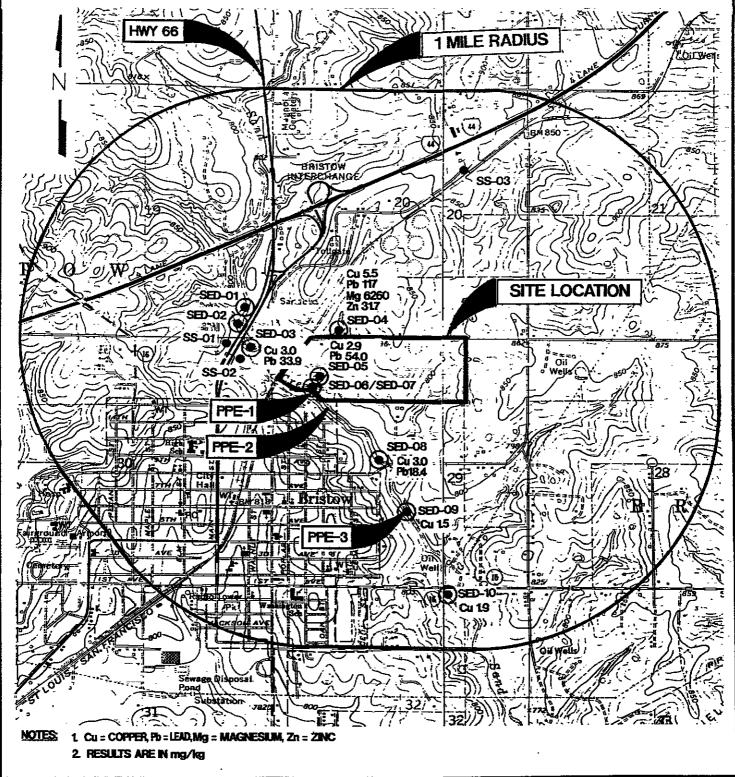
6.3.4 Resources

Resources associated with the surface water pathway may include irrigation, watering of commercial livestock, commercial food preparation, commercial aquaculture, and water recreation. No resources have been identified for the site surface water pathway.

6.4 SURFACE WATER PATHWAY CONCLUSIONS

WESTON collected a total of 10 sediment samples from surface water bodies in an effort to establish background levels and to determine if a release of on-site hazardous substances to the surface water pathway has occurred. The following conclusions can be drawn from the data from these samples:

- Based on the ESI sampling data, a release of copper and lead to Sand Creek has been documented. These substances were also found in on-site sources as described in Section 4.
- Wetland frontages occur along segments of Sand Creek and Little Deep Fork Creek, beginning approximately 2.5 miles downstream of the location of sediment sample SED-10, the most downstream documented point of contamination. Sand Creek and the Little Deep Fork Creek are considered recreational fisheries.
- No habitats for endangered species or drinking water intakes have been documented within the 15-mile target distance limit for the site.





BASE MAP FROM:

J.S. DEPT. OF THE INTERIOR GEOLOGICAL SURVEY ER STOW QUADRANGLE 3LOK CUMBRANGLE

OKLAHOMA 7.5 MINUTE SERIES (TOPOGRAPHIC) 1973 SERIES

LEGEND

SED-01 SEDIMENT SAMPLE LOCATION

SOIL SAMPLE LOCATION

0 1000 2000 SCALE IN FEET

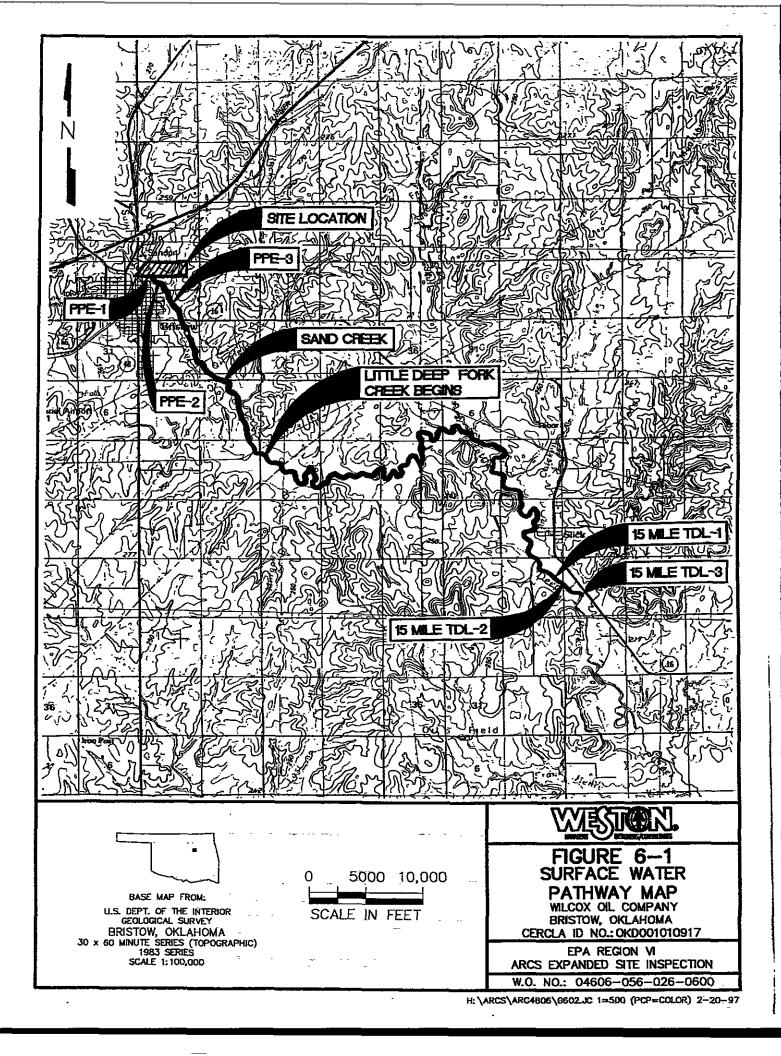
WESTON.

SEDIMENT SAMPLE
STATIONS AND RESULTS
WILCOX OIL COMPANY

WILCOX OIL COMPANY BRISTOW, OKLAHOMA CERCLA ID NO.: OKDOQ1010917

EPA REGION VI ARCS EXPANDED SITE INSPECTION

W.O. NO.: 04606-056-026-0600



WILCOX OIL COMPANY BRISTOW, CREEK COUNTY, OK EPA CERCLÁ ID NO. OKD001010917

TABLE 6-1 SURFACE WATER PATHWAY SUMMARY

	SEGM	EST. AVERAGE		
SEGMENT NAME	PATHWAY 1	PATHWAY 2	PATHWAY 3	FLOW RATE
Sand Creek	3.5	3.4	2.9	50 cfs ^{1,2}
Little Deep Fork	11.5	11.5	12.1	400 cfs

Notes:

I. cfs = cubic feet per second

2. Source: Reference I

TABLE 6-2
Wilcox Oil Company (CERCLIS ID OKD0001010917)
Sediment Sampling Results Above Background Concentrations

	I -	Background Concentration		Characterization Sample Concentrations					
Analyte	Maximum Background	3 Times Maximum Background	Station Sample Date QC Type Depth	SED-03 SED-03 11/18/96 Normal 0.0'-0.5'	SED-04 SED-04 11/18/96 Normal 0.0'-0.5'	SED-05 SED-05 11/19/96 Normal 0.0'-0.5'	SED-08 SED-08 11/19/96 Normal 0.0'-0.5'	SED-09 SED-09 11/19/96 Normal 0.0'-0.5'	
Metals			· · · · · · · · · · · · · · · · · · ·						
Copper (mg/kg)	ND		[3 LJ^	5.5 L	2.9 L	3 L	1.5 L	
Lead (mg/kg)	6	18		33.9 J	117 ј	54 J	18.4 д	4.6 J	
Magnesium (mg/kg)	333	999		425 L	6260	317 L	465 L	228 L	
Zinc (mg/kg)	7.6	22.8		11.6	31.7	11.6	21.7	6 uc	

L Reported concentration is between the IDL and the CRDL.

J Estimated value.

UC Not detected at the reported quantitation limit which was raised due to apparent blank contamination.

LJV Reported concentration is between the IDL and the CRDL. Estimated value.

WILCOX OIL COMPANY BRISTOW, CREEK COUNTY, OK EPA CERCLA ID NO. OKD001010917

TABLE 6-3 ENDANGERED AND THREATENED SPECIES CREEK COUNTY, OKLAHOMA

SPECIES	FEDERAL STATUS
Bald Eagle	Endangered
Interior least tern	Endangered
Peregrine falcon	Endangered
Piping plover	Threatened
Cerulean warbler	Category 2 Candidate ¹
Loggerhead shrike	Category 2 Candidate
Prairie mole cricket	Category 2 Candidate
Arkansas River speckled chub	Category 2 Candidate
Texas horned lizard	Category 2 Candidate
Western Snowy plover	Category 2 Candidate
Fissa sedge (Carex fissa)	Category 2 Candidate

Notes:

 Category 2 - Species needs additional study to determine whether it should be listed as Endangered or Threatened.

2. Source: Reference 1

TABLE 6-2 (Continued) Wilcox Oil Company (CERCLIS ID OKD0001010917) Sediment Sampling Results Above Background Concentrations

		Background Concentration		Characterization Sample Concentrations						
Analyte	Maximum Background	3 Times Maximum Background	Station Sample Date QC Type Depth	SED-10 SED-10 11/19/96 Normal 0.0'-0.5'	Left Blank On Purpose	Left I lank On Purpose	Left Blank On Purpose	Left Blank On Purpose		
Metals					-		·			
Copper (mg/kg)	ND	*******		1.9 L						
Lead (mg/kg)	6	18		15 Jv						
Magnesium (mg/kg)	333	999		254 L						
Zinc (mg/kg)	7,6	22.8		8.7						

L Reported concentration is between the IDL and the CRDL.

Jv Estimated value and low biased. Actual concentration may be higher than the concentration reported.

WILCOX OIL COMPANY BRISTOW, CREEK COUNTY, OK EPA CERCLA ID NO. OKD001010917

TABLE 6-4 SUMMARY OF WETLANDS

STREAM SEGMENT	WETLANDS TYPE ¹	DISTANCE FROM A PPE TO NEAREST WETLANDS FRONTAGE	TOTAL WETLANDS FRONTAGE
Sand Creek	PF01A	PPE-3: 3.0 miles	0.25 mile
Little Deep Fork Creek	PF01A	PPE-3: 3.0 miles	8.5 miles

Notes:

PF01A - Palustrine Forested, Broad-Leaved Deciduous, Temporarily Flooded 1.

Source: Reference 20

SECTION 7 SOIL EXPOSURE

Soil exposure is another potential route of exposure to hazardous substances attributable to the site. The discussion in this section focuses on the important soil exposure factors such as soil type, area of contamination, accessibility and the likelihood of exposure, and the potential targets.

7.1 SURFICIAL CONDITIONS

Information regarding the surficial conditions at the site is summarized in this section.

7.1.1 <u>Soil Type</u>

- The Stephensville and Darnell fine sandy loams cover the majority of the site.
 These soils consist of shallow to moderately deep upland soils developed over reddish-yellow to red sandstone or interbedded sandstone and sandy shale. Runoff is slow to moderate, but internal drainage is moderate to rapid.
- The Verdigris silt loam is located in the southwestern portion of the site, along Sand Creek. These soils occupy the flood plains of streams and are moderately well drained; however, they are flooded occasionally to frequently. Parent material consists of slightly acid to weakly alkaline alluvial sediments washed from soils of the prairies.
- Oil-waste Land has been mapped in areas throughout the site, occurring in tank
 farm and refinery equipment areas. The areas mapped in this miscellaneous land
 type have been practically ruined for agricultural use by oil and salt-water waste
 from oil wells. They are more or less gullied and eroded and are almost barren of
 vegetation. They range in size from one acre to several acres.

The Stephensville and Darnell fine sandy loam series and the Verdigris silt loam are the soils most likely associated with the site prior to being impacted by oil field activities (Reference 1).

7.1.2 Areas of Contamination

Based on the analytical results described in Section 4, several on-site areas of contaminated soils were identified. Refer to Section 4 for a discussion on characterization of contaminated soils as a source.

7.2 LIKELIHOOD OF RELEASE

Important factors related to the likelihood of exposure to an area of contaminated soil at the site are presented in the following subsections.

7.2.1 Attractiveness of the Site

Sources at the site are located in a pasture that is not used for public recreation and, therefore, has a low attractiveness.

7.2.2 Site Accessibility

The site is fenced and access is restricted. However, Mr. Elias stated that children frequent his property despite the presence of fences and verbal warnings. The children have reportedly played in and around the pit and ponds, and Mr. Elias expressed a great deal of concern about children falling into the ponds (Reference 2).

7.2.3 Soil Analytical Results from Previous Investigations

Based on file information provided to WESTON by EPA, no soil sampling has been conducted as part of previous investigations.

7.2.4 ESI Soil Sampling and Analytical Results

As discussed in Sections 3 and 4, 11 soil samples (SS-01_through SS-08, SS-11 through SS-13) were collected in an effort to characterize and document the presence of hazardous substances in soils at the site. Two samples (SS-08, SS-13) were collected as field duplicates for quality assurance/quality control (QA/QC) purposes. In addition, three soil samples (SS-01 through SS-03) were collected from off-site locations to establish background concentrations of constituents. The background samples were collected from the same soil series as the site and in areas that appeared to be undisturbed. In all cases, the soil samples were collected from depths ranging from 0 to 6 inches bgs. The ESI sample locations are shown in Figures 3-1 and 3-2 following the text of Section 3. Analytical results from the ESI sampling investigation are presented in Table 4-4 of Section 4. The area of contaminated soils associated with residences could not be determined based on one or two sample locations. Estimates of areas were made using aerial photographs when possible; these estimated areas are presented in Table 4-9.

7.3 SOIL EXPOSURE TARGETS

The resident population living or working in an area of soil contamination, the population living near areas of soil contamination, designated recreational areas, and terrestrial resources such as agriculture are potential targets of soil exposure. The soil exposure targets identified are summarized in the following sections.

7.3.1 Resident Population

The resident population is defined at those persons living or attending school or day care on a property where site-attributable soil contamination has been documented and whose residence, school, or day care center is within 200 feet of that contamination. Based on the ESI sampling results, a resident population of five has been documented for the Wilcox site. This population includes the two people living in the White residence and the three people living in the Lee residence (References 3 and 9).

7.3.2 Worker Population

The worker population is defined as those persons working on a property with an area of site-related sources or soil contamination and whose workplace area is on or within 200 feet of the areas of documented soil contamination.

No workers have workplace areas within 200 feet of the areas of documented soil contamination at the Wilcox site.

7.3.3 Nearby Population

The nearby population includes those persons who live within one mile of areas of soil contamination attributable to the site. Those persons in houses, schools, or day care facilities within one mile of the site have been considered part of the nearby population. The nearby population was estimated using the EPA Geographic Exposure Modeling System (GEMS) database, 1990 Census information, and a house count conducted during the 1994 PA (Reference 1). The population distribution around the site is summarized in Table 7-1.

7.3.4 Sensitive Environments

Terrestrial sensitive environments include national parks and preserves, federal wilderness areas, terrestrial habitats for federal- and state-designated endangered or threatened species, and other national- and state-designated areas important to the maintenance of unique biotic communities. No terrestrial sensitive environments were identified within areas of soil contamination.

7.3.5 Resources

Resources associated with the soil exposure pathway may include commercial agriculture, commercial silviculture, commercial livestock production or grazing, and major or designated recreational areas. No resources have been identified in areas of observed contamination.

7.4 SOIL EXPOSURE CONCLUSIONS

WESTON collected a total of 11 soil samples from various areas on site and from off-site locations in order to characterize contaminant levels in site soils. The following conclusions can be drawn from the soil data from these samples:

- As discussed in Section 4, a number of areas at the Wilcox site were identified as
 areas of soil having concentrations of site-related constituents at concentrations
 greater than three times maximum background levels. Both inorganic and organic
 constituents were detected; these include TPH, lead, mercury, zinc, acetone, and
 semivolatile organics.
- The area of contaminated soils associated with residences could not be adequately
 determined based on the one or two sample locations; however, the presence of
 hazardous substances has been established and determined to be attributable to the
 site.
- Five people live in areas of soil contamination related to the Wilcox site. A nearby
 population has been established for the site. No resources or terrestrial sensitive
 environments have been identified for the site.
- The areas of soil contamination occur in fenced sections of the site (corresponding to property divisions). However, children frequently trespass in the eastern portion of the site, where areas of contaminated soil and wastes exist. These areas may therefore pose a potential threat to human health.

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TABLE 7-1 NEARBY POPULATION

DISTANCE INTERVAL (miles)	ESTIMATED POPULATION	REFERENCE
On-Site	5	1, 2
0 to ¼	57	1, 2
¼ to ½	495	1
½ to l	1,836	ī

SECTION 8 AIR PATHWAY

The discussion in this section of the report focuses on the air pathway, another potential route of hazardous substance migration from the site. Atmospheric conditions, the likelihood of release to air, and potential air pathway targets are identified below.

8.1 METEOROLOGICAL INFORMATION

The prevailing wind direction changes seasonally; wind roses are provided in Reference 23. Information concerning rainfall in the region is presented in Subsection 5.2.3 of this report.

8.2 LIKELIHOOD OF RELEASE

Information concerning the likelihood of a release to the air pathway is presented in this subsection.

8.2.1 Air Sampling Results from Previous Investigations

No analytical data for the air pathway are known to exist.

8.2.2 ESI Air Quality Sampling and Analytical Results

Quantitative air sampling was not completed as part of the ESI. However, WESTON did perform air monitoring of the breathing zone during the site reconnaissance and sampling visit using an organic vapor analyzer (OVA) and miniature Realtime Aerosol Meter (mini-RAM). The mini-RAM was used to monitor for particulate concentrations in the air. Conditions requiring an upgrade in the level of personal protective equipment were not encountered by the field team. No sustained particulate concentrations or organic vapor readings above background levels were encountered in the breathing zone during site activities (Reference 1). However, elevated OVA readings were detected in sample holes where wastes were disturbed.

8.3 AIR PATHWAY TARGETS

The population, resources, and sensitive environments within 4 miles of the site are potential targets of a release of hazardous constituents to the air pathway. The targets identified for the air pathway are discussed in the following sections.

8.3.1 Population Within 4 Miles

Using GEMS, 1990 Census data, and a house count performed during the 1994 PA, the population residing within approximately 4 miles of the site was estimated (Reference 1). This population is summarized in Table 8-1.

8.3.2 Sensitive Environments

No sensitive environments have been identified on-site (Reference 1).

8.3.3 Resources

Resources associated with the air migration pathway may include commercial agriculture, commercial silviculture, and major or designated recreational areas within ½ mile of a source at the site. No resources have been identified on or near the site (Reference 1).

8.4 AIR PATHWAY CONCLUSIONS

No releases of hazardous substances to the air pathway have been documented and the site is inactive. The nearby population is small. However, a release to the air pathway is of some concern since numerous sources exist on site, five people live near documented areas of soil contamination, and trespassing children have been seen playing in and near areas of documented contamination.

WILCOX OIL COMPANY BRISTOW, CREEK COUNTY, OK EPA CERCLA ID NO. OKD001010917

TABLE 8-1 POPULATION WITHIN 4 MILES

DISTANCE INTERVAL (miles)	ESTIMATED POPULATION	REFFRENCES
On-Site	5	2, 11
0 to ¼	57	1, 2, 11
¼ to ½	495	1
½ to I	1.836 . II. T	1
I to 2	2,691	I
2 to 3	1,017	1
3 to 4	517	1

SECTION 9 CONCLUSIONS

The Wilcox site is located on the north side of the City of Bristow, Creek County, Oklahoma. The site covers approximately 98 acres and is the location of an inactive oil refinery and tank farm. Refining began at the site during the 1920s and ended in the 1960s. The site is also bordered on the northwest and west by former refineries. The site includes remnants of an inactive refinery, pits, ponds, and a number of circular berms that surround tank bottoms. High concentrations of metals, volatile and semivolatile organic compounds, and TPH have been detected in on-site sources.

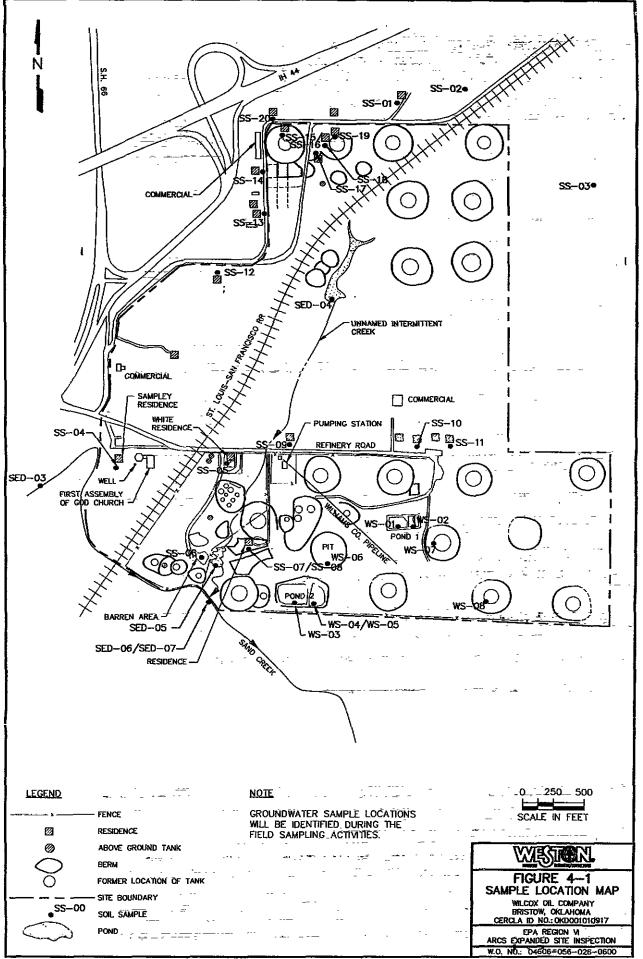
Concerns associated with the migration and exposure pathways are summarized as follows:

- As discussed in Section 5, a release to the groundwater pathway has not been documented but is of major concern. No groundwater samples were collected as part of this ESI. The population immediately north of the site are on private wells that produce from a shallow aquifer. In addition, the site overlies a potential recharge zone for an aquifer that is used for public drinking water supply.
- As discussed in Section 6, a release to the surface water pathway has been documented. Elevated levels of copper and lead have been detected in sediment samples collected from Sand Creek. Sand Creek and Little Deep Fork Creek are used for limited recreational fishing. Downstream of documented contamination are wetlands frontages in Sand Creek and Little Deep Fork Creek.
- As discussed in Section 7, elevated concentrations of inorganic and organic
 constituents have been documented in the surface soils on-site. A resident
 population of five has been established for the site. Although the site is not used for
 recreational activities, children frequently trespass in areas of soil contamination.
 No one works on the site.
- As discussed in Section 8, a release to the air pathway has not been documented.
 The site is inactive and the nearby population is low. However, five people live on-site near sources of hazardous substances, and children frequently trespass in areas of documented contamination.

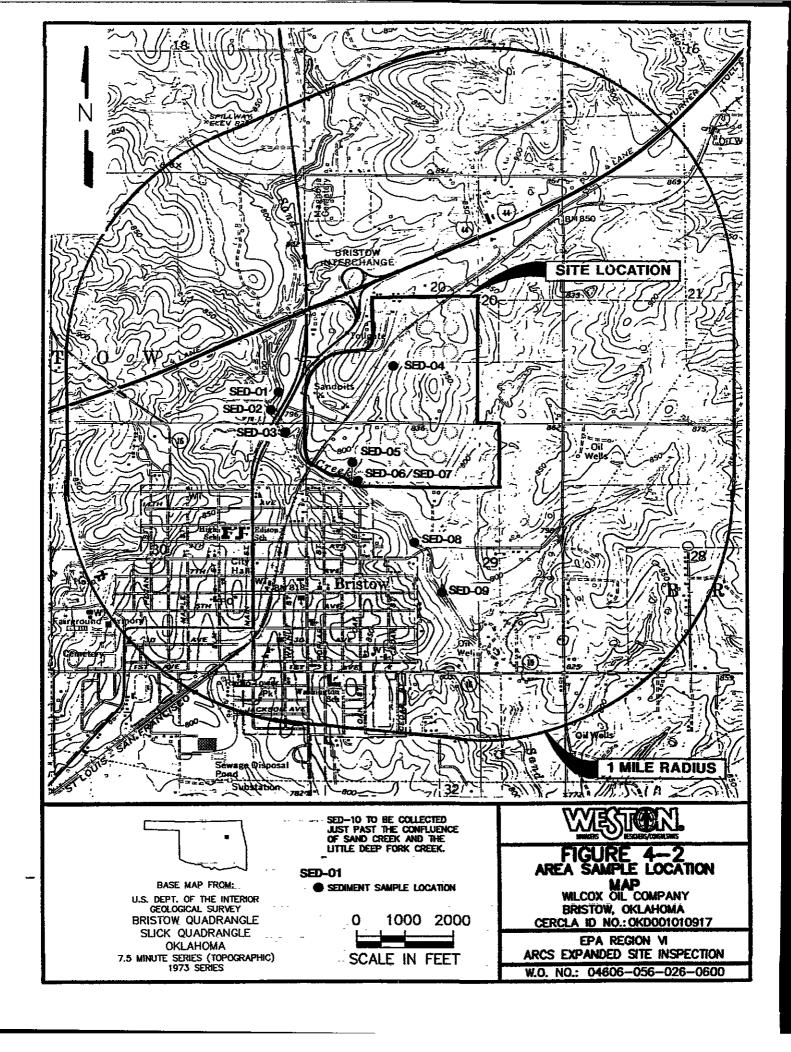
SECTION 10 REFERENCES

- State of Oklahoma, Department of Environmental Quality (ODEQ). 1994. Preliminary Assessment of the Wilcox Oil Company, Bristow, Creek County, Oklahoma. 15 December 1994.
- 2. WESTON (Roy F. Weston, Inc.). 1996. Field Logbook Notes for the Wilcox Oil Company site. 16 August 1996; 18-20 November 1996.
- 3. USGS (U.S. Geological Survey). 1973. Bristow Quadrangle, Oklahoma (7.5-minute series topographic map).
- 4. EPA Region 6 (U.S. Environmental Protection Agency). 1996. Site Access Letters for the Wilcox Oil Site.
- 5. Williams, D.G. 1996. WESTON. Personal Communication with Mr. Hal Cantwell, ODEO.
- 6. Ace Aerial Photo Service. Aerial Photographs for portions of Section 29, Township 16 North, Range 9 East: 1956, 1966, 1976, 1985.
- Aerial Oklahoma, Inc. 1995. Aerial Photographs for portions of Section 29, Township 16 North, Range 9 East.
- 8. Reid, G. 1930. "Wilcox Has Modern Installation in Bristow Plant." *The Refiner and Natural Gasoline Manufacturer*. Vol. 9, No. 9. September 1930.
- 9. Williams, D.G. 1996. Personal communication with Mr. Jack White, Property Owner.
- 10. EPA (U.S. Environmental Protection Agency). 1994. Potential Hazardous Waste Site, Site Identification Form.
- 11. Sanborn Map Company. Excerpts from Fire Insurance Maps for Bristow, Creek County, Oklahoma: 1915, 1920, 1923, and 1961.
- 12. Creek County Tax Assessor. Ownership Map for the Wilcox Oil site. Unknown date.
- 13. Cates, D.A. 1994. ODEQ. Memorandum: Hydrology and Ground Water Use, Wilcox Oil Company Refinery Site, Creek County, Oklahoma. 8 November 1994.
- 14. WESTON. 1997. Net Annual Precipitation Calculation. Houston, Texas.
- 15. Cates, D.A. 1994. ODEQ. Memorandum: Public Water Supply near Bristow, Oklahoma. 12 December 1994.

- 16. USGS. 1990. Bristow, Oklahoma. (30 x 60 minute series topographic map).
- Federal Emergency Management Agency. 1981. Flood Hazard Boundary Map, Creek County, Oklahoma (Unincorporated Area). Community Panel Number 400490 0007 A, 19 May 1981.
- 18. U.S. Department of Commerce. 1961. Rainfall Frequency Atlas. 2-year, 24-hour Rainfall for the United States.
- 19. Williams, D.G. 1997. Personal Communication with Ms. Rebecca Pool, ODEQ Water Quality Division. 21 February 1997
- 20. U.S. Fish and Wildlife Service. National Wetlands Inventory Maps for the Bristow, OK (1980) and Slick, OK (1980), 7.5-minute series quadrangles.
- 21. Williams, D.G. 1997. Personal Communication with Mr. Mark Ambler, Oklahoma Fish and Wildlife, 26 February 1997.
- 22. U.S. Department of Agriculture, Soil Conservation Service. 1959. Soil Survey for Creek County, Oklahoma. May 1959.
- 23. Environmental Science Services Administration. 1968. Climatic Atlas. Reprinted by the National Oceanic and Atmospheric Administration.



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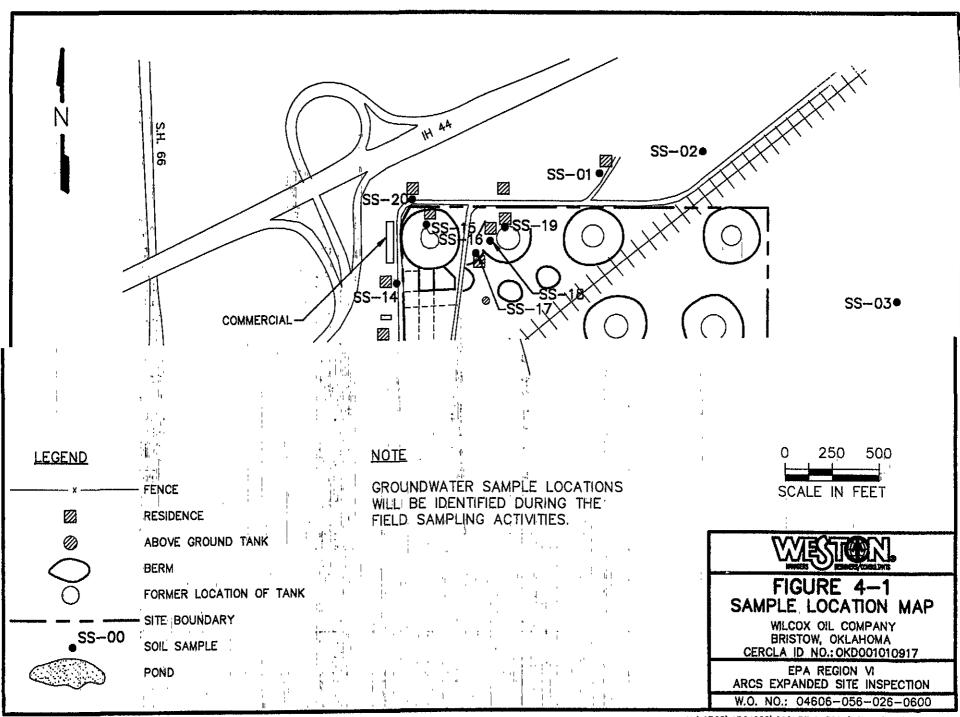


Table 4-2
Wilcox Oil Company (CERCLIS ID OKD0001010917)
Sampling Station Descriptions and Rationales

Station Identification/Type	Description	Rationale	Sample Identification/QC Type
GW-01 Background	Low concentration groundwater sample collected from a well located upgradient of the site.	To characterize and document background levels of constituents in groundwater.	GW-01 Normal
GW-02 Background	Low concentration groundwater sample collected from a well located upgradient of the site.	To characterize and document background levels of constituents in groundwater.	GW-02 Normal
GW-03 Characterization	Low concentration groundwater sample conjected from a well located on-site.	To characterize and document the presence of hazardous constituents in groundwater.	GW-03 Normal
			GW-13 Duplicate
GW-04 Characterization	Low concentration groundwater sample collected from a well located on-site.	To characterize and document the presence of hazardous constituents in groundwater.	GW-04 Normal
			GW-14 Duplicate
GW-05 Characterization	Low concentration groundwater sample collected from a well located on-site.	To characterize and document the presence of hazardous constituents in groundwater.	GW-05 Normal
GW-06 Characterization	Low concentration groundwater sample collected from a well located on-site.	To characterize and document the presence of hazardous constituents in groundwater.	GW-06 Normal
GW-07 Characterization	Low concentration groundwater sample collected from a well located on-site.	To characterize and document the presence of hazardous constituents in groundwater.	GW-07 Normal
GW-08 Characterization	Low concentration groundwater sample collected from a well located on-site.	To characterize and document the presence of hazardous constituents in groundwater.	GW-08 Normal
GW-09 Characterization	Low concentration groundwater sample collected from a well located on-site.	To characterize and document the presence of hazardous constituents in groundwater.	GW-09 Normal
GW-10 Characterization	Low concentration groundwater sample collected from a well located on-site.	To characterize and document the presence of hazardous constituents in groundwater.	GW-10 Normal

Table 4-2 (Continued) Wilcox Oil Company (CERCLIS ID OKD0001010917) Sampling Station Descriptions and Rationales

Station Identification/Type	Description	Rationale	Sample Identification/QC Type
GW-11 Characterization	Low concentration groundwater sample collected from a well located on or near the site.	To characterize and document the presence of hazardous constituents in groundwater.	GW-11 Normal
GW-12 Characterization	Low concentration groundwater sample collected from a well located on or near the site.	To characterize and document the presence of hazardous constituents in groundwater.	GW-12 Normal
GW-15 Field QA/QC	Field blank sample collected in the field using deionized water.	Field blank sample for quality assurance purposes.	GW-15 Field Blank
SED-01 Background	Low concentration sediment sample collected from Sand Creek, west of S.H. 66 and upstream of the PPE.	To document a background levels of constituents in the surface water pathway.	SED-01 Normal
SED-02 Background	Low concentration sediment sample collected from Sand Creek, west of S.H. 66 and upstream of the PPE.	To document background levels of constituents in the surface water pathway.	SED-02 Normal
SED-03 Background	Low concentration sediment sample collected from Sand Creek, east of S.H. 66 and upstream of the PPE.	To document background levels of constituents in the surface water pathway.	SED-03 Normal
SED-04 Characterization	Low concentration sediment sample collected from an on-site pond and potential wetland.	To document a release of site-attributable hazardous constituents to the surface water pathway.	SED-04 Normal
SED-05 Characterization	Low concentration sediment sample collected from an on-site pond and potential wetlands.	To document a release of site-attributable hazardous constituents to the surface water pathway.	SED-05 Normal
SED-06 Characterization	Low concentration sediment sample collected from Sand Creek, at the PPE.	To document a release of site-attributable hazardous substances to the surface water pathway.	SED-06 Normal
			SED-07 Duplicate
SED-08 Characterization	Low concentration sediment sample collected from Sand Creek, approximately 0.5 mile downstream of the PPE.	To document a release of site-attributable hazardous substances to the surface water pathway.	SED-08 Normal
SED-09 Characterization	Low concentration sediment sample collected from Sand Creek, approximately 0.75 mile downstream of the PPE.	To document a release of site-attributable hazardous substances to the surface water pathway.	SED-09 Normal

Table 4-2 (Continued) Wilcox Oil Company (CERCLIS ID OKD0001010917) Sampling Station Descriptions and Rationales

Station Identification/Type	Description	Rationale	Sample Identification/QC Type
SED-10 Characterization	Low concentration sediment sample collected from the Little Deep Fork Creek, just past the confluence of Sand Creek.	To document a release of site-attributable hazardous substances to the surface water pathway.	SED-10 Normal
SS-01 Background	Low concentration soil sample collected from the yard of an off-site residence.	To characterize background levels of constituents in soils.	SS-01 Normal
SS-02 Background	Low concernration soil sample collected north of and outside the influence of the site.	To characterize background levels of constituents in soils.	SS-02 Normal
SS-03 Background	Low concentration soil sample collected from an undisturbed area east of the site.	To document the background levels of constituents in soils.	SS-03 Normal
SS-04 Characterization	Low concentration soil sample collected from the yard of the Sampley residence.	To document the presence of hazardous constituents in surface soils.	SS-04 Normal
SS-05 Characterization	Low concentration soil sample collected from the yard of the White residence.	To document the presence of hazardous constituents in the surface soils.	SS-05 Normal
SS-06 Characterization	Low concentration soil sample collected from barren area in the southern portion of the White's property.	To document the presence of hazardous constituents in surface soils.	SS-06 Normal
SS-07 Characterization	Low concentration soil sample collected from an on-site residential property.	To document the presence of hazardous constituents in surface soils.	SS-07 Normal
			SS-08 Duplicate
SS-09 Characterization	Low concentration soil sample collected from an on-site residential property.	To document the presence of hazardous constituents in surface soils.	SS-09 Normal
SS-10 Characterization	Low concentration soil sample collected from an on-site residential property.	To document the presence of hazardous constituents in surface soils.	SS-10 Normal
SS-11 Characterization	Low concentration soil sample collected from an on-site residential property.	To characterize and document the presence of hazardous constituents in on-site soils.	SS-11 Normal

THIS DOCUMENT WAS PREPARED BY ROY F. WESTON, INC. EXPRESSLY FOR EPA. IT SHALL NOT BE RELEASED OR DISCLOSED IN WHOLE OR IN PART WITHOUT THE EXPRESS, WRITTEN PERMISSION OF EPA.

Table 4-2 (Continued) Wilcox Oil Company (CERCLIS ID OKD0001010917) Sampling Station Descriptions and Rationales

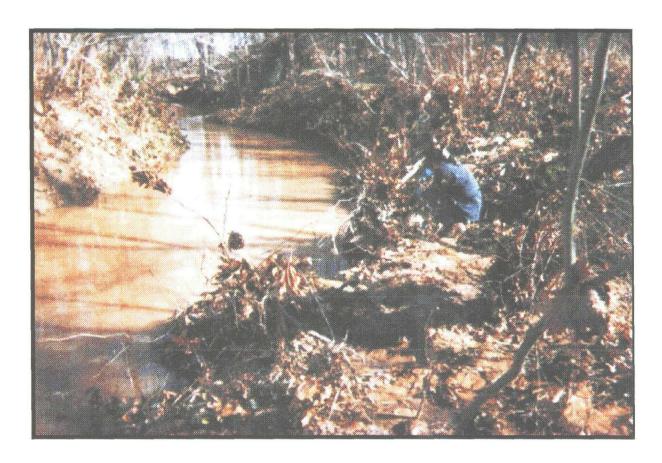
Station Identification/Type	Description	Rationale	Sample Identification/QC Type
SS-12 Characterization	Low concentration sample collected from a residential property.	To characterize and document the presence of hazardous constituents in on-site soils.	SS-12 Normal
SS-13 Characterization	Low concentration sample collected from a residential property.	To characterize and document the presence of hazardous constituents in soils.	SS-13 Normal
SS-14 Characterization	Low concentration sample collected from a residential property.	To characterize and document the presence of hazardous constituents in soils.	SS-14 Normal
SS-15 Characterization	Low concentration sample collected from an on-site residential property.	To characterize and document the presence of hazardous constituents in on-site soils.	SS-15 Normal
			SS-16 Duplicate
SS-17 Characterization	Low concentration sample collected from an on-site residential property.	To characterize and document the presence of hazardous constituents in on-site soils.	SS-17 Normal
SS-18 Characterization	Low concentration sample collected from an on-site residential property.	To characterize and document the presence of hazardous constituents in on-site soils.	SS-18 Normal
SS-19 Characterization	Low concentration sample collected from a residential property.	To characterize and document the presence of hazardous constituents in surface soils.	SS-19 Normal
SS-20 Characterization	Low concentration sample collected from a residential property.	To characterize and document the presence of hazardous constituents in surface soils.	SS-20 Normal
WS-01 Characterization	High concentration waste sample collected from Pond 1.	To characterize and document the presences of hazardous constituents in the pond.	WC-01 Normal
WS-02 Characterization	High concentration waste sample collected from Pond 1.	To characterize and document the presences of hazardous constituents in the pond.	WS-02 Normal
WS-03 Characterization	High concentration waste sample collected from Pond 2.	To characterize and document the presences of hazardous constituents in the pond.	WS-03 Normal

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Table 4-2 (Continued) Wilcox Oil Company (CERCLIS ID OKD0001010917) Sampling Station Descriptions and Rationales

Station Identification/Type	Description	Rationale	Sample Identification/QC Type
WS-04 Characterization	High concentration waste sample collected from Pond 2.	To characterize and document the presence of hazardous constituents in the pond.	WS-04 Normai
			WS-05 Duplicate
WS-06 Characterization	High concentration waste sample collected from Pit.	To characterize and document the presence of hazardous constituents in the Pit.	WS-06 Normal
WS-07 Characterization	High concentration waste sample collected from a leaded tank bottom.	To characterize and document the presence of hazardous constituents in the source.	WS-07 Normal
WS-08 Characterization	High concentration waste sample collected from a leaded tank bottom.	To characterize and document the presence of hazardous constituents in the source.	WS-08 Normal

APPENDIX A PHOTOGRAPHS



Site Name: Wilcox Oil Company

Site Location: Bristow, OK
CERCLIS ID: OKD0001010917

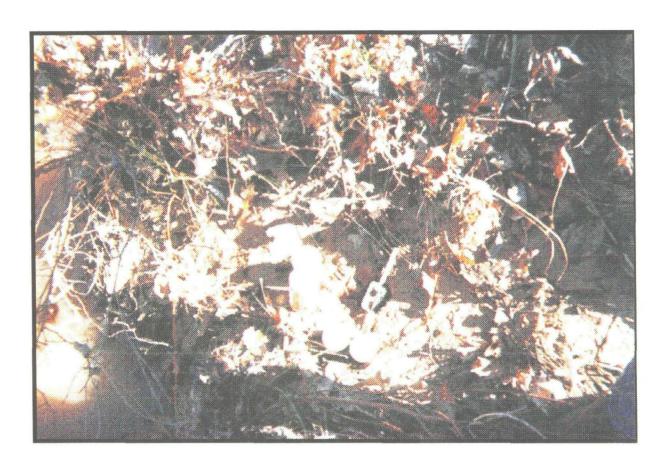
Weston Work Order: 04606-056-026-0600

Photographer: Diane Williams
Witness: Joy Ishigo

Date of Photograph: 11/18/96

Description: Background sediment sample SED-01, collected from

Sand Creek, west (upstream) of S.H. 66 and site.



Site Name: Wilcox Oil Company

Site Location: Bristow, OK

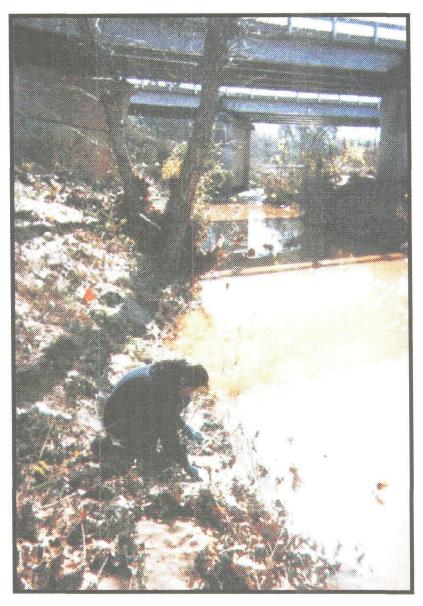
CERCLIS ID: OKD0001010917

Weston Work Order: 04606-056-026-0600

Photographer: Diane Williams

Witness: Joy Ishigo Date of Photograph: 11/18/96

Description: Close-up of SED-01 sediment samples.



Site Name: Wilcox Oil Company

Site Location: Bristow, OK
CERCLIS ID: OKD0001010917
Weston Work Order: 04606-056-026-0600

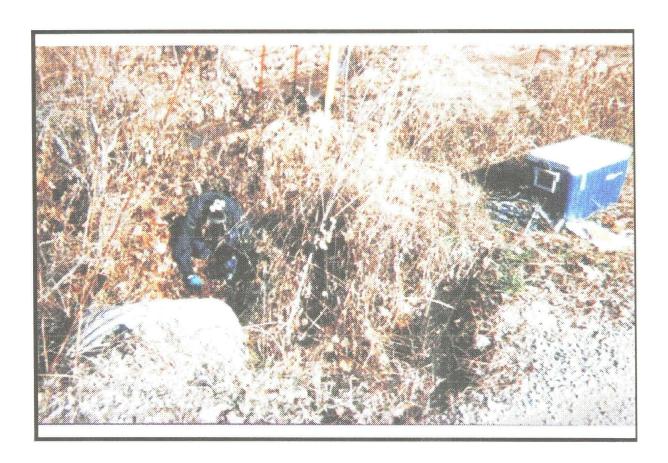
Photographer: Diane Williams
Witness: Joy Ishigo
Date of Photograph: 11/18/96

Description: Background sediment sample SED-02, collected

from Sand Creek upstream of SH 66.

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Photograph: 4



Site Name: Wilcox Oil Company

Site Location: Bristow, OK

CERCLIS ID: OKD0001010917

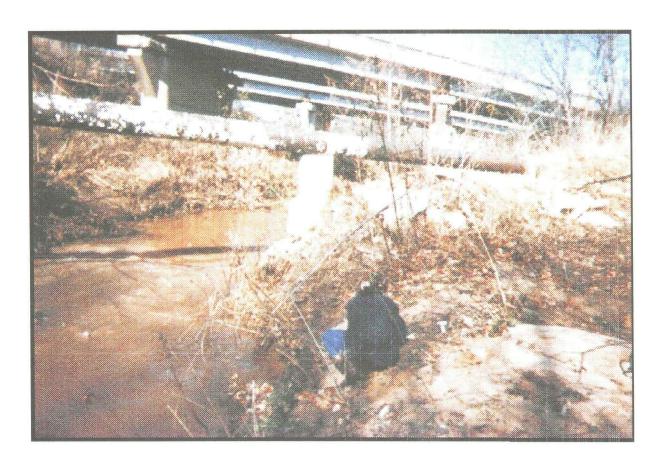
Weston Work Order: 04606-056-026-0600 Photographer: Diane Williams

Witness: Joy Ishigo Date of Photograph: 11/18/96

Description: Sediment sample SED-04, collected from Tributary

lof Sand Creek, north of the site and the Refinery

Road.



Site Name: Wilcox Oil Company

Site Location: Bristow, OK

CERCLIS ID: OKD0001010917 **Weston Work Order:** 04606-056-026-0600

Photographer: Diane Williams

Witness: Joy Ishigo Date of Photograph: 11/18/96

Description: Sediment sample SED-03, collected from Sand Creek,

just west of SH 66 bridge.



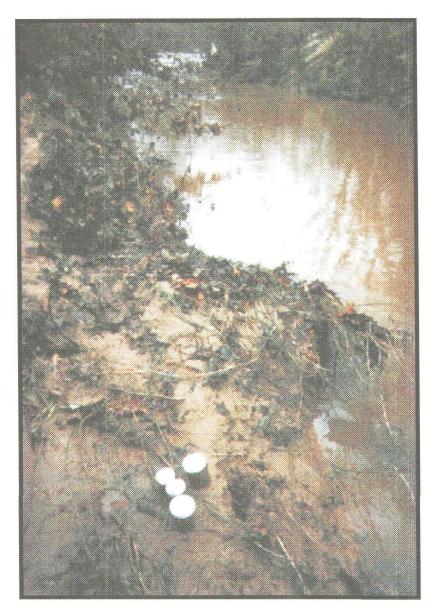
Site Name: Wilcox Oil Company

Site Location: Bristow, OK
CERCLIS ID: OKD0001010917
Weston Work Order: 04606-056-026-0600

Photographer: Diane Williams
Witness: Joy Ishigo
Date of Photograph: 11/18/96

Description: Sediment sample location SED-06/07, collected from

PPE-1 in Sand Creek.



Site Name: Site Location:

CERCLIS ID:

Weston Work Order:

Photographer:

Witness:

Date of Photograph:

Description:

Wilcox Oil Company

Bristow, OK

OKD0001010917

04606-056-026-0600

Diane Williams

Joy Ishigo

11/18/96

Sediment sample location SED-08, collected

from Sand Creek north of 6th Street bridge.

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Photograph: 8



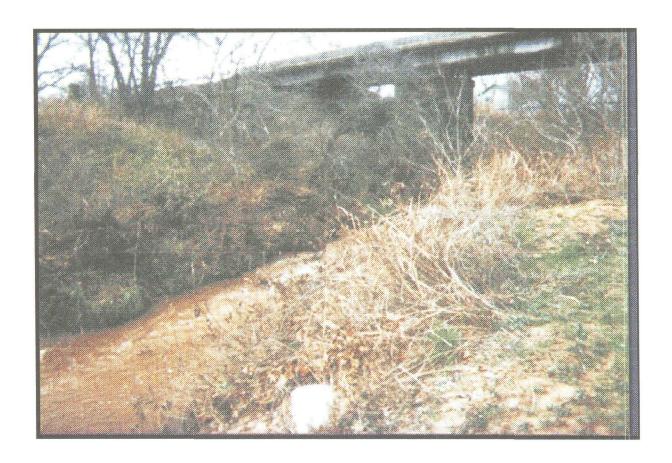
Site Name: Wilcox Oil Company

Site Location: Bristow, OK
CERCLIS ID: OKD0001010917
Weston Work Order: 04606-056-026-0600

Photographer: Diane Williams
Witness: Joy Ishigo
Date of Photograph: 11/19/96

Description: Sediment sample location SED-09, collected from

PPE-3 in Sand Creek.



Site Name: Wilcox Oil Company

Site Location: Bristow, OK

CERCLIS ID: OKD0001010917 **Weston Work Order:** 04606-056-026-0600

Photographer: Diane Williams
Witness: Joy Ishigo
Date of Photograph: 11/19/96

Description: Sediment sample SED-10, collected from Sand Creek,

just south of Highway 16 bridge.



Site Name: Wilcox Oil Company

Site Location: Bristow, OK

CERCLIS ID: OKD0001010917 **Weston Work Order:** 04606-056-026-0600

Photographer: Diane Williams

Witness: Joy Ishigo Date of Photograph: 11/18/96

Description: Soil sample SS-06, collected from unvegetated area in

the southern portion of the Whites' property.



Site Name: Wilcox Oil Company

Site Location: Bristow, OK
CERCLIS ID: OKD0001010917

Weston Work Order: 04606-056-026-0600

Photographer: Diane Williams
Witness: Joy Ishigo
Date of Photograph: 11/18/96

Description: Unusual soil structure noted in unvegetated area

of White's property (near soil sample station

SS-06).



Site Name: Wilcox Oil Company

Site Location: Bristow, OK

CERCLIS ID: OKD0001010917

Weston Work Order: 04606-056-026-0600

Photographer: Diane Williams

Witness: Joy Ishigo Date of Photograph: 08/16/96

Description: View of unvegetated area located in southern portion

of Whites' property.



Site Name:

Wilcox Oil Company

Site Location:

Bristow, OK

CERCLIS ID:

OKD0001010917 04606-056-026-0600

Weston Work Order:

Diane Williams

Photographer: Witness:

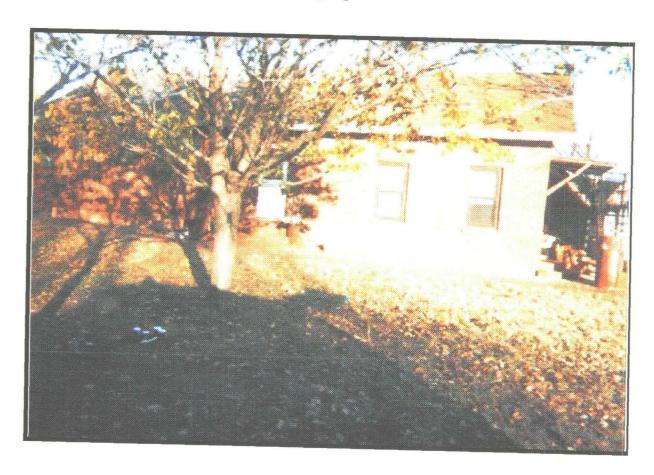
Joy Ishigo

Date of Photograph:

08/16/96

Description:

Tank on Whites' property.



Site Name: Wilcox Oil Company
Site Location: Bristow OK

 Site Location:
 Bristow, OK

 CERCLIS ID:
 OKD0001010917

 Weston Work Order:
 04606-056-026-0600

Photographer:Diane WilliamsWitness:Joy IshigoDate of Photograph:11/18/96

Description: Soil sample location SS-05, collected from Whites'

yard. White residence in background.



Site Name:

Site Location:

CERCLIS ID:

Weston Work Order:

Photographer:

Witness:

Date of Photograph:

Description:

Wilcox Oil Company

Bristow, OK

OKD0001010917

04606-056-026-0600

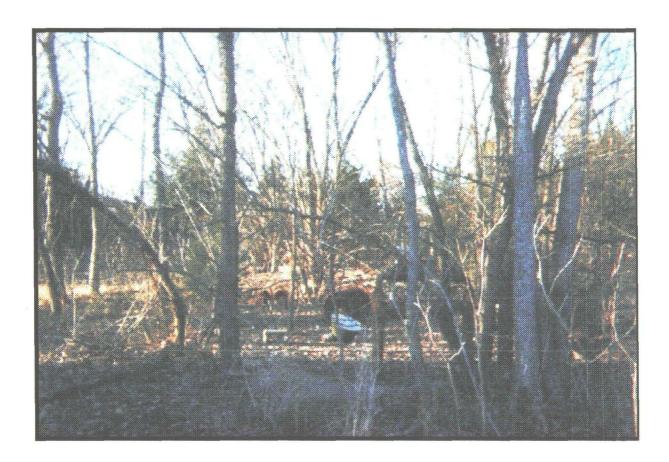
Diane Williams

Joy Ishigo

11/19/96

Debris and trash near refinery building ruins on

Whites' property.



Site Name: Wilcox Oil Company

Site Location: Bristow, OK

CERCLIS ID: OKD0001010917

Weston Work Order: 04606-056-026-0600 **Photographer:** Diane Williams

Witness: Joy Ishigo
Date of Photograph: 11/19/96

Description: Discarded rusted drums near refinery building ruins on

White property.



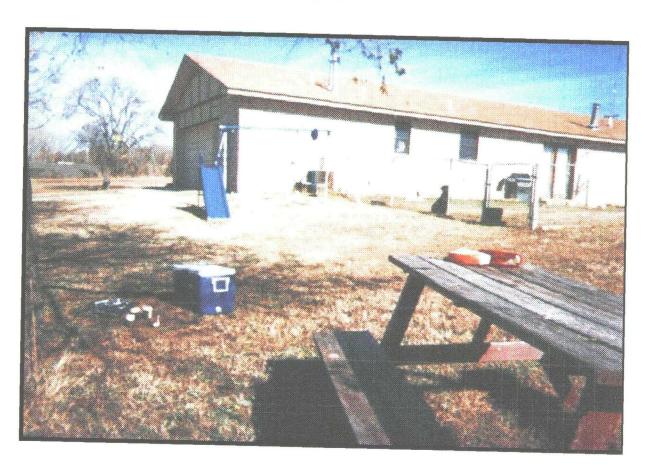
Site Name: Wilcox Oil Company

Site Location: Bristow, OK
CERCLIS ID: OKD0001010917

Weston Work Order: 04606-056-026-0600
Photographer: Diane Williams

Witness: Joy Ishigo Date of Photograph: 11/19/96

Description: Old refinery buildings on Whites' property.



Site Name: Wilcox Oil Company

Site Location: Bristow, OK

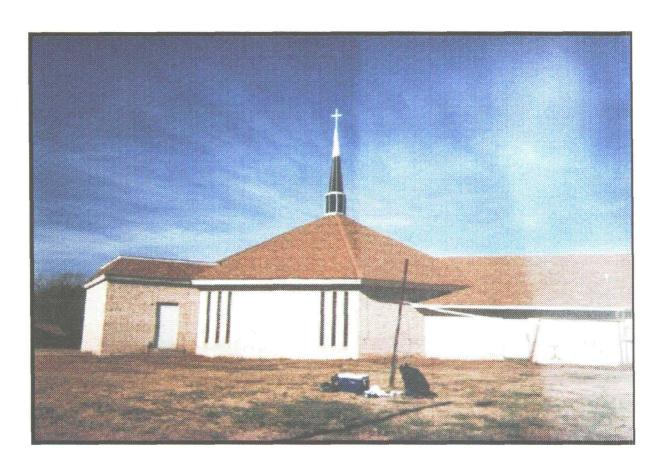
CERCLIS ID: OKD0001010917 Weston Work Order: 04606-056-026-0600

Photographer: Diane Williams

Witness: Joy Ishigo Date of Photograph: 11/18/96

Description: Soil sample location SS-04, collected from yard of

Sampley residence.



Site Name:

Site Name: Site Location:

CERCLIS ID:

Weston Work Order:

Photographer:

Witness:

Date of Photograph:

Description:

Wilcox Oil Company

Bristow, OK

OKD0001010917

04606-056-026-0600

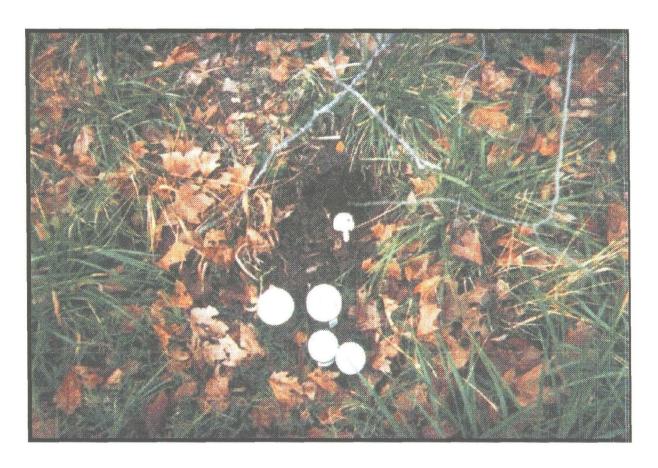
Diane Williams

Joy Ishigo

11/18/96

Soil sample SS-12, collected from yard behind First

Assembly of God church.



Site Name: Wilcox Oil Company

Site Location: Bristow, OK
CERCLIS ID: OKD0001010917

Weston Work Order: 04606-056-026-0600

Photographer: Diane Williams **Witness:** Joy Ishigo 11/19/96

Description: Background soil sample SS-01, collected from field

located on the west side of S.H. 66, south of Sand

Creek.



Site Name: Wilcox Oil Company

Site Location: Bristow, OK
CERCLIS ID: OKD0001010917

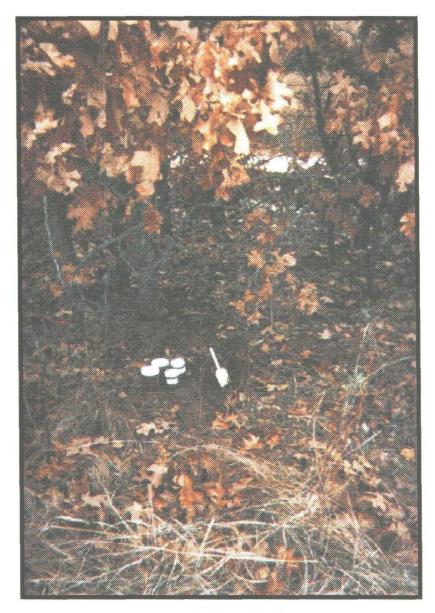
Weston Work Order: 04606-056-026-0600

Photographer: Diane Williams **Witness:** Joy Ishigo

Date of Photograph: 11/19/96

Description: Background soil sample SS-02, collected from east

side of S.H. 66.



Site Name:

Site Location:

CERCLIS ID:

Weston Work Order:

Photographer:

Witness:

Date of Photograph:

Description:

Wilcox Oil Company

Bristow, OK

OKD0001010917

04606-056-026-0600

Diane Williams

Joy Ishigo

11/19/96

Background soil sample SS-03, collected

approximately 0.7 mile due north of the site.



Site Name: Wilcox Oil Company

Site Location: Bristow, OK

CERCLIS ID: OKD0001010917 **Weston Work Order:** 04606-056-026-0600

Photographer: Diane Williams
Witness: Joy Ishigo

Date of Photograph: 11/19/96

Description: Soil samples SS-07 and SS-08, collected from yard of

Lee residence.



Site Name: Wilcox Oil Company

Site Location: Bristow, OK
CERCLIS ID: OKD0001010917
Weston Work Order: 04606-056-026-0600

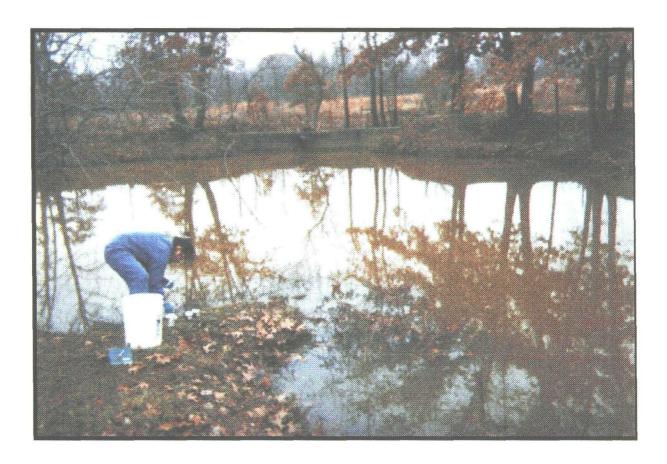
Photographer: Diane Williams
Witness: Joy Ishigo

Date of Photograph: Joy Isnigo 11/19/96

Description: Small pond behind Lee residence. Note drainage swale leading from fence line to pond; layers of black

asphalt-like material noted at the confluence of the

swale and pond.



Site Name: Wilcox Oil Company

Site Location: Bristow, OK

CERCLIS ID: OKD0001010917

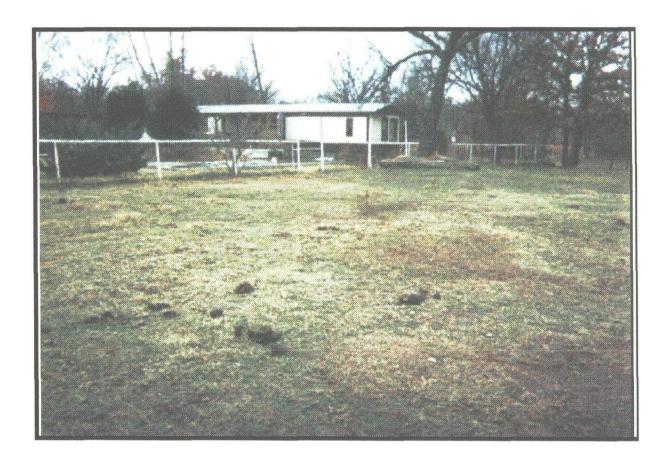
Weston Work Order: 04606-056-026-0600

Photographer: Diane Williams **Witness:** Joy Ishigo

Date of Photograph: 11/19/96

Description: Sediment sample SED-05, collected from east side of

pond behind Lee residence.



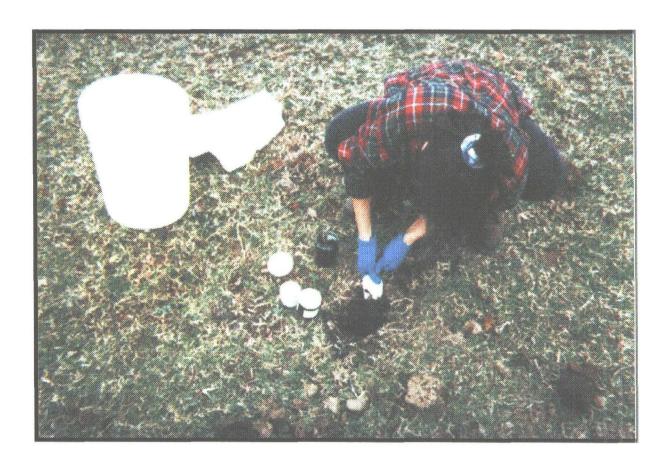
Site Name: Wilcox Oil Company

Site Location: Bristow, OK
CERCLIS ID: OKD0001010917
Weston Work Order: 04606-056-026-0600

Photographer: Diane Williams **Witness:** Joy Ishigo 11/20/96

Description: View of Lee residence. Seeps of black material occur

in foreground and in cracks of driveway.



Site Name: Wilcox Oil Company

Site Location: Bristow, OK

CERCLIS ID: OKD0001010917

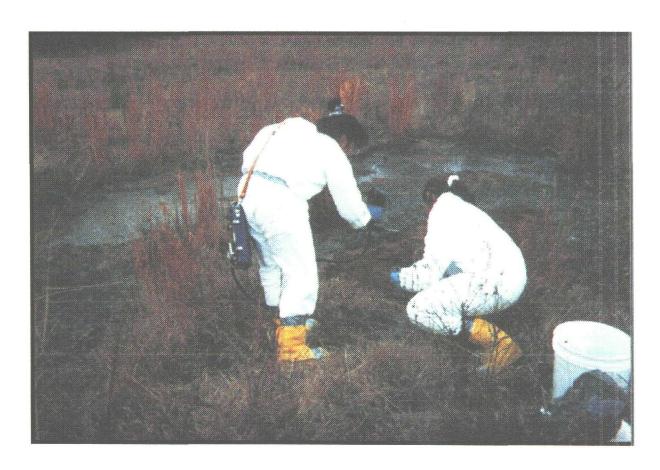
Weston Work Order: 04606-056-026-0600

Photographer: Diane Williams

Witness: Joy Ishigo Date of Photograph: 11/20/96

Description: Waste sample WS-03, collected from seep on Lee

property.



Site Name: Wilcox Oil Company

Site Location: Bristow, OK

CERCLIS ID: OKD0001010917 **Weston Work Order:** 04606-056-026-0600

Photographer: Diane Williams
Witness: Joy Ishigo

Date of Photograph: Joy Isnigo 11/20/96

Description: Waste sample WS-01, collected from Pond 1.



Wilcox Oil Company Site Name:

Site Location: Bristow, OK **CERCLIS ID:** OKD0001010917

04606-056-026-0600 Weston Work Order:

Photographer: Diane Williams Witness: Joy Ishigo

Date of Photograph: 11/20/96

View of seeps emanating from Pond 1. **Description:**



Site Name: Wilcox Oil Company

Site Location: Bristow, OK
CERCLIS ID: OKD0001010917
Weston Work Order: 04606-056-026-0600

Photographer: Diane Williams

Witness: Joy Ishigo Date of Photograph: 11/20/96

Description: View of black, tarry material seeping up through

ponded water on Pond 1.

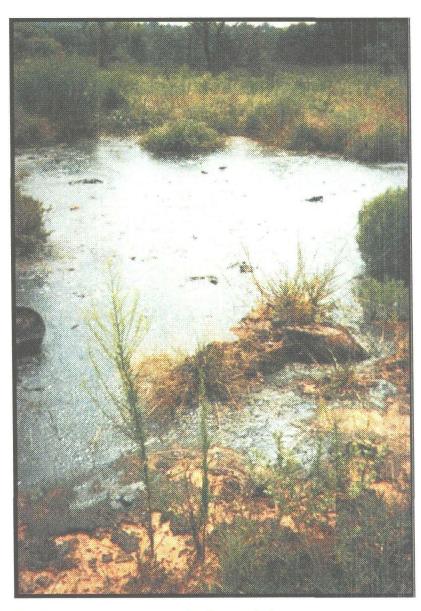


Site Name: Wilcox Oil Company

Site Location: Bristow, OK
CERCLIS ID: OKD0001010917
Weston Work Order: 04606-056-026-0600

Photographer: Diane Williams **Witness:** Joy Ishigo 11/20/96

Description: Close-up of seep on Pond 1.



Site Name: Site Location: CERCLIS ID: Weston Work Order:

Photographer:

Witness:

Date of Photograph:

Description:

Wilcox Oil Company

Bristow, OK OKD0001010917 04606-056-026-0600

Diane Williams Joy Ishigo 08/16/96

View of Pond 1.



Site Name: Wilcox Oil Company

Site Location: Bristow, OK
CERCLIS ID: OKD0001010917
Weston Work Order: 04606-056-026-0600

Photographer: Diane Williams

Witness: Joy Ishigo Date of Photograph: 11/20/96

Description: Waste sample WS-04, collected from Pond 2.



Site Name: Wilcox Oil Company

Site Location: Bristow, OK

CERCLIS ID: OKD0001010917

Weston Work Order: 04606-056-026-0600

Photographer: Diane Williams **Witness:** Joy Ishigo

Witness: Joy Ishigo Date of Photograph: 11/20/96

Description: Sheen on surface water runoff from Pond 2.



Site Name: W

Site Location:

CERCLIS ID:

Weston Work Order:

Photographer:

Witness:

Date of Photograph:

Description:

Wilcox Oil Company

Bristow, OK

OKD0001010917

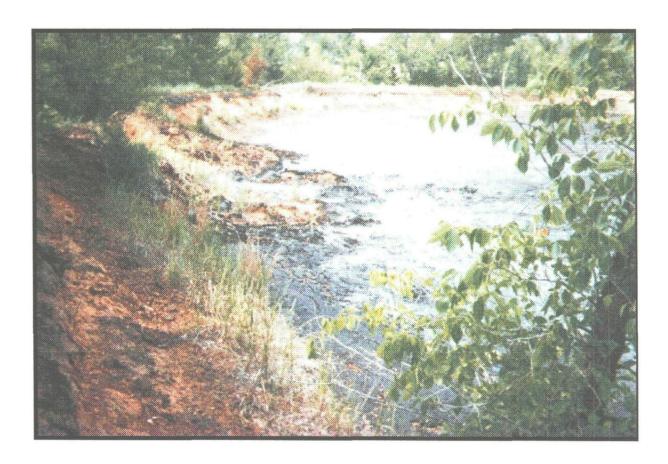
04606-056-026-0600

Diane Williams

Joy Ishigo

11/20/96

Breached berm on southwest side of Pond 2.



Site Name: Wilcox Oil Company

Site Location: Bristow, OK
CERCLIS ID: OKD0001010917

Weston Work Order: 04606-056-026-0600

Photographer: Diane Williams
Witness: Joy Ishigo
Date of Photograph: 11/20/96

Description: View of Pit. Note cut berm on left.



Site Name: Wilcox Oil Company

Site Location: Bristow, OK

CERCLIS ID: OKD0001010917

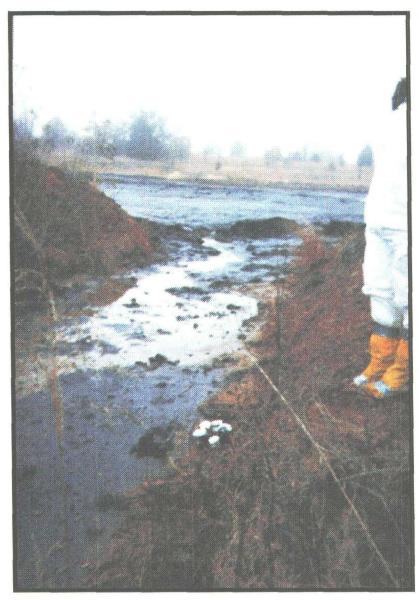
Weston Work Order: 04606-056-026-0600

Photographer: Diane Williams

Witness: Joy Ishigo

Date of Photograph: 11/20/96

Description: View of black, tarry material migrating from Pit.



Site Name:

Site Location: CERCLIS ID:

Weston Work Order:

Photographer:

Witness:

Date of Photograph:

Description:

Wilcox Oil Company

Bristow, OK

OKD0001010917

04606-056-026-0600

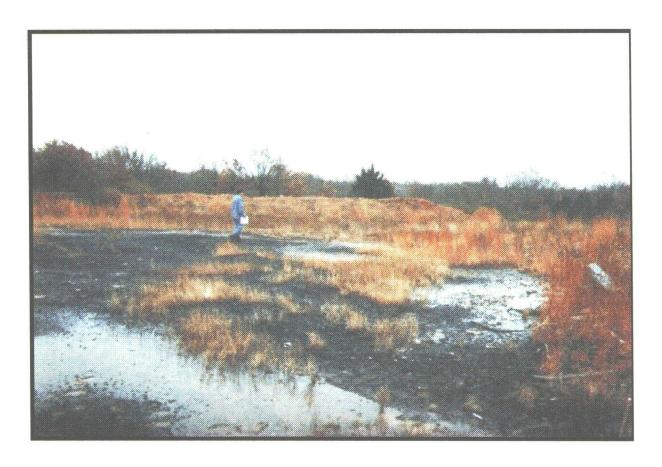
Diane Williams

Joy Ishigo 11/20/96

Waste samples WS-05 and WS-06, collected

from material migrating through the breached

berms of Pit.



Site Name: Wilcox Oil Company

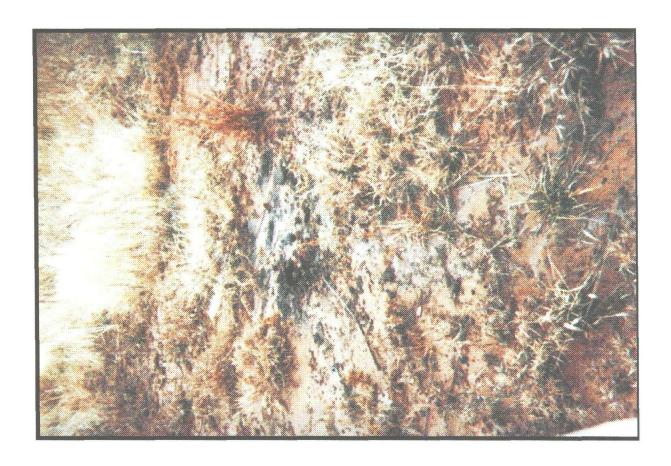
Site Location: Bristow, OK

CERCLIS ID: OKD0001010917 **Weston Work Order:** 04606-056-026-0600

Photographer: Diane Williams

Witness: Joy Ishigo **Date of Photograph:** 11/20/96

Description: View of tank bottom near Waste Sample WS-07.



Site Name: Wilcox Oil Company

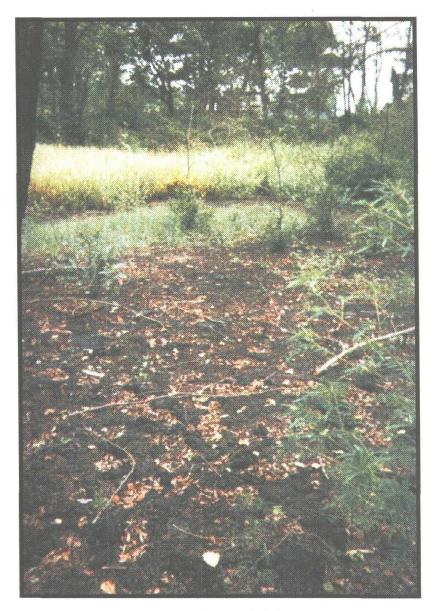
Site Location: Bristow, OK
CERCLIS ID: OKD0001010917
Weston Work Order: 04606-056-026-0600

Photographer: Diane Williams
Witness: Joy Ishigo
Date of Photograph: 11/20/96

Description: Sheen on water draining from tank bottom area near

waste sample WS-07.

Photograph: 41



Site Name: Wilcox Oil Company

Site Location: Bristow, OK

CERCLIS ID: OKD0001010917 **Weston Work Order:** 04606-056-026-0600

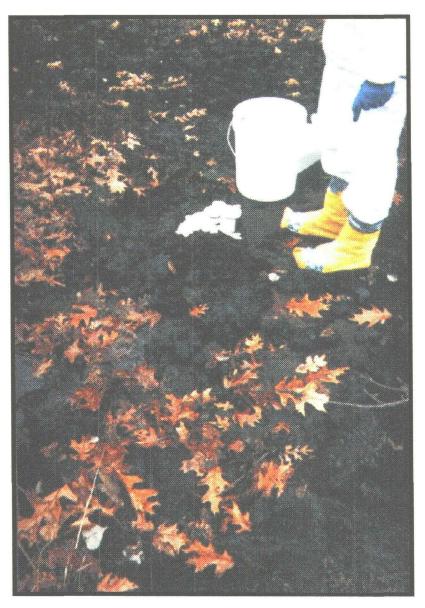
Veston Work Order: 04606-056-026-0600

Photographer: Diane Williams **Witness:** Joy Ishigo

Date of Photograph: 08/16/96

Description: View of tank bottom; waste sample WS-08

collected from this area.



Site Name:

Site Location:

CERCLIS ID:

Weston Work Order:

Photographer:

Witness:

Date of Photograph:

Description:

Wilcox Oil Company

Bristow, OK

OKD0001010917

04606-056-026-0600

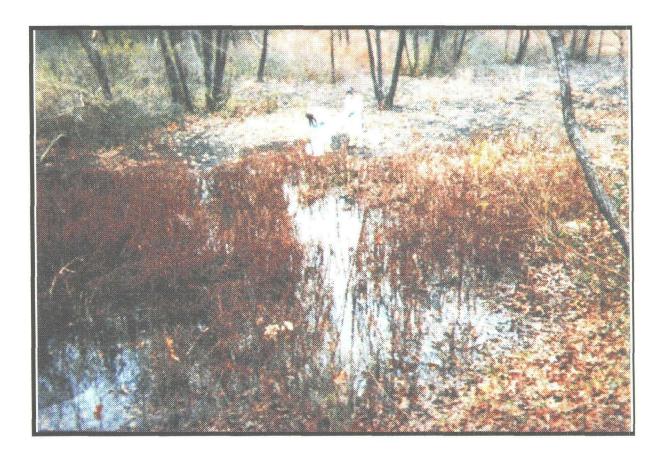
Diane Williams

Joy Ishigo

11/20/96

Close-up of waste sample WS-08, collected from

tank bottom material.



Site Name: Wilcox Oil Company

Site Location: Bristow, OK

CERCLIS ID: OKD0001010917

Weston Work Order: 04606-056-026-0600

Photographer: Diane Williams

Witness: Joy Ishigo Date of Photograph: 11/20/96

Description: View of tank bottom area and waste sample WS-08.

APPENDIX B DATA PACKAGE EXCERPTS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6 HOUSTON BRANCH 10625 FALLSTONE RD. HOUSTON, TEXAS 77099

MEMORANDUM

Date:

1-24-1997

Subject:

Contract Laboratory Program Data Review

From:

Melvin L. Ritter, ESAT RPO, 6MD-HC

To:

L. Biasco , 6SF-RA

Site: WILCOX OIL

Case#: <u>25159</u>

SDG#: MFG-Z66

The EPA Region 6 Houston Branch ESAT data validation team has completed a review of the submitted Contract Laboratory Program (CLP) data package for the referenced site. The samples analyzed and reviewed are detailed in the attached Regional data review and assessment report for this case.

The data package was found to be:

- () Acceptable: No major problems with data package.
- (X) Provisional: Use of data requires caution.

 Data is acceptable for Regional use. Problems are noted in the review report.
- () Unacceptable: Some or all of data should not be used. Problems are noted in the review report.

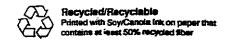
Questions regarding the data review report can be addressed to me.

Attachments

cc: R. Flores, Region 6 CLP/TPO

M. El-feky, Region 6 Data Coordinator

Files (2)



Lockheed Martin Services Group ESAT Region 6

One Sterling Plaza, 10101 Southwest Freeway, Suite 500 Houston, TX 77074 TEL: (713) 988-2959

FACSIMILE COVER SHEET

Disample deligram who deligrams were the
Please deliver the following pages to:
Name Paul Jay Kuhn
Firm ARI
City Seattle State WA
Telephone 206-621-6490 Ext
Fax Telephone No. 206-521-7523 Ext.
Sender:
Name Mervin Doucet ESAT
Date January 17, 1997 Time
Total Number of pages including this Cover Sheet 2
If you do not receive all the pages or if any pages are unclear, please call: (713) 988-2959
MESSAGES:

Fax No. (713) 988-2994

Case 25159 SDG MFGZ66 Page <u>1</u> of 1 ESAT FILE NO.: 12077

Contract Laboratory Program REGIONAL/LABORATORY COMMUNICATION SYSTEM FAX Record Log

Date of FAX: January 17, 1997

Laboratory Name: ARI

Lab Contact: Paul Jav Kuhn

Region:

Regional Contact: Mervin Doucet (ESAT)

FAX Initiated by: Region

In reference to data for the following sample number:

MFG-Z66

Summary of Questions/Issues:

- The sample tag was not sealed in a plastic bag (SOW ILMO4.0, 1. page B-13, F.3.d). Please submit an acknowledgement of this contractual deviation and note for future reference.
- According to the raw data (page 271), the selenium analysis 2. time on the Form 14 (page 53) for sample MFG-Z66 should be 15:33. Please resubmit the corrected Form 14.
- According to the raw data (page 286), the mercury analysis 3. times for most standards do not match the analysis times on the Form 14 (page 55). Please make the necessary corrections and resubmit.
- According to the raw data (pages 80-84), the ICP analysis times for all standards do not match the analysis times on the Form 14 (page 53). Please make the necessary corrections and resubmit.

EPA expects the laboratory to look into items and submit data within seven days to Mahmoud El-Feky, U.S. EPA, 10625 Fallstone Road, Houston TX 77099.

Distribution: (1) Lab Copy (2) Region Copy

LOCKHEED MARTIN SERVICES GROUP ONE STERLING PLAZA 10101 SOUTHWEST FREEWAY, SUITE 500 HOUSTON, TEXAS 77074

Page 1 of 2

MEMORANDUM

DATE: January 17, 1997

TO: Dr. Melvin Ritter, ESAT RPO, Region VI

FROM: Dr. Tom C.H. Chiang, ESAT ETM, Region VI

SUBJECT: CLP Data Review

REF: TDF # 6-7129A ESAT File # I2077

Attached is the data review summary for Case #25159 SDG #MFGZ66 Site WILCOX OIL

COMMENTS:

I. CONTRACTUAL ASSESSMENT OF DATA PACKAGE:

A. The hard copy data review confirmed the following contractual noncompliance found by CCS.

The laboratory performed the cyanide matrix spike analysis with the wrong cyanide spike concentration (SOW ILM04.0, page E-23, Table 3). The reviewer determined the wrong cyanide spike concentration did not affect the technical usability of the sample results.

- B. The hard copy data review detected the following contractual noncompliances not found by CCS.
 - The data package was received at the Region nine days late for the required 35-day turnaround time.
 - 2. The laboratory did not seal the sample tag in a plastic bag (SOW ILM04.0, page B-13, F.3.d).

II. TECHNICAL/USABILITY ASSESSMENT OF DATA PACKAGE:

A total of 24 results were reviewed for this data package. The data package is technically provisional because of the following problems.

LOCKHEED MARTIN SERVICES GROUP ONE STERLING PLAZA 10101 SOUTHWEST FREEWAY, SUITE 500 HOUSTON, TEXAS 77074

Page 2 of 2

MEMORANDUM

Attached is the data review summary for Case #25159 SDG #MFGZ66 Site WILCOX OIL

II. TECHNICAL/USABILITY ASSESSMENT OF DATA PACKAGE, continued:

- A. Approximately eight percent of all results were qualified because of technical problems.
- B. The matrix spike recoveries were below the QC limits for antimony and lead.
- C. The difference between lead laboratory duplicate results exceeded the QC limit.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION 6 - HOUSTON BRANCH 10625 FALLSTONE ROAD HOUSTON, TEXAS 77099

INORGANIC REGIONAL DATA ASSESSMENT

CASE NO. <u>25159</u>	SITE WILCOX OIL
LABORATORY ARI	NO. OF SAMPLES 1
CONTRACT # 68-D5-0134	MATRIX SOIL
SDG #4MFGZ66	REVIEWER (IF NOT ESD) ESAT
SOW# ILM04.0	REVIEWER'S NAME Mervin Doucet
ACCT # 7FAXJN28 SF # FAXUZZ	COMPLETION DATE January 17, 1997

SAMPLE NO.: MFG-Z66

DATA ASSESSMENT SUMMARY

		ICP	HG	Cyanide	GFAA
1. 2. 3. 4. 5.	HOLDING TIMES CALIBRATIONS BLANKS MATRIX SPIKES DUPLICATE ANALYSIS ICP QC	O O C M O	0 0 0 0	0 0	0 0 M M
	FAA QC			4.1.1.1 J	
8.	LCS		0	<u>o</u> :	
9.	SAMPLE VERIFICATION	<u> </u>		···· <u>O</u>	<u> </u>
10.	OTHER QC	N/A	N/A	<u>N/A</u>	N/A
11.	OVERALL ASSESSMENT	_ <u>M</u>		<u> </u>	<u>_M_</u>

O = Data had no problems.

M = Data qualified because of major or minor problems.

ACTION ITEMS: The sample tag was not sealed in a plastic bag. The laboratory returned the data package to the Region nine days i -- m i **z**i pitri li <u>L</u>uker

AREAS OF CONCERN: The matrix spike recoveries were less than 75 percent for antimony and lead. The lead laboratory duplicate difference failed QC criteria. The laboratory used the wrong cvanide spike concentration to perform cyanide matrix spike analysis.

NOTABLE PERFORMANCE:

Case 25159 SDG MFGZ66 Site WILCOX OIL Lab ARI

COMMENTS: The package consisted of data for one soil sample for total metals and cyanide analysis by ILM04.0. The laboratory failed to meet the required 35-day data package turnaround time and did not place the sample tag in a sealed plastic bag. The laboratory also performed the cyanide matrix spike analysis with an incorrect spike concentration. Twenty-five percent of the reported results are above the CRDL's.

This data package is technically provisional because of problems with matrix spike recoveries and a laboratory duplicate difference. The technical usability of all reported sample results is appropriately indicated by ESAT's final data qualifiers in the attached Data Summary Sheet.

An Evidence Audit was conducted for the Complete Sample Delivery Group File (CSF), and the Evidence Inventory Checklist is attached to this report.

NOTE: THE FOLLOWING REVIEW NARRATIVE ADDRESSES BOTH CONTRACTUAL AND TECHNICAL ISSUES. THE ASSESSMENT MADE FOR EACH QC PARAMETER IS SOLELY BASED ON THE TECHNICAL DATA USABILITY, WHICH MAY NOT NECESSARILY BE AFFECTED BY CONTRACTUAL PROBLEMS.

- 1. Holding Times: Acceptable. All holding time and sample preservation criteria were met.
- 2. Calibrations: Acceptable. All calibrations were acceptable. Analysis of CRDL standards indicated that instrument performance near the CRDL's was acceptable.
- 3. Blanks: Acceptable. All preparation and calibration blanks met contractual requirements although concentrations for six analytes were reported in the blanks. The potassium result was below the CRDL and affected by the preparation blank concentration.
- 4. Pre-digestion/Pre-distillation Matrix Spike Recovery:
 Provisional. The results for antimony and lead were
 qualified as estimated with a low bias because the matrix
 spike recoveries failed QC criteria.
- 5. Duplicate Analysis: Provisional. The lead laboratory duplicate difference failed technical QC criteria, so the lead result was qualified as estimated.

Case 25159 SDG MFGZ66 Site WILCOX OIL Lab ARI

6. ICP Quality Control:

Serial Dilution: Acceptable. All serial dilution differences met QC criteria.

<u>Interference Check Sample:</u> Acceptable. All ICS results were acceptable indicating correct interelement and background correction.

TCP Coefficient of Variation: Acceptable. All ICP replicate readings were consistent.

7. Furnace Atomic Absorption Quality Control:

FAA Analytical Spike Recovery: Acceptable. All FAA analytical spike recovery were acceptable.

FAR Duplicate Injection Relative Standard Deviation:
Acceptable. All percent relative standard deviations (%RSD)
for duplicate injections were acceptable.

Metrod of Standard Addition: Acceptable. All MSA's had acceptable correlation coefficients.

- 8. Laboratory Control Sample: Acceptable. All LCS recoveries were within the QC limits.
- 9. Sample Verification: The reviewer could not verify all reporting errors found by CCS. The reviewer did detect some reporting errors not found by CCS and contacted the laboratory concerning these issues (see attached FAX Record Log).
- 10. Other QC: Not applicable.
- 11. Overall Assessment: The data package is technically provisional because of the following problems.

The antimony and lead results were qualified because the matrix spike recoveries were below the QC limits.

The lead result was further qualified because the difference between laboratory duplicate results failed QC criteria.

INORGANIC DATA QUALIFIER DEFINITIONS

The following definitions provide brief explanations of the ESAT-Region 6 qualifiers assigned to results in the inorganic data review process.

- U Undetected at the laboratory reported detection limit (IDL).
- L Reported concentration is between the IDL and the CRDL.
- J Result is estimated because of outlying quality control parameters such as matrix spike, serial dilution, FAA spike recovery, etc.
- R Result is unusable.
- F A possibility of a false negative exists.
- UC Reported concentration should be used as a raised detection limit because of apparent blank contamination.
- ^ High bias. Actual concentration may be lower than the concentration reported.
- v Low bias. Actual concentration may be higher than the concentration reported.

DATA SCHMARY_

Case No.: 25159

SDG. No.: MFGZ66 ___Reviewer: M. Doucet

Laboratory: ARI

Matrix:

SCIL

Ünits:

πg/Kg

	SED-10 FLAG	FLAGFLAG	FLAG -	FLAG	COMMENTS
EPA TR #=>	MFG-256				·
ALUMINUM	1570	•		. • .	<u></u>
ANTIMONY	10.3 UJV				
ARSENIC	ī L				
BARIUM	15.3 %	ئىڭ ئىسى سىدانىي	' ' . ' <u>2.*</u> _		
BERYLLIUM	0.22 J				-
CADMIUM	0.44 U			-	
CALCIUM	382 L			-	
CHROMIUM	3.7	•			_ = 1 -
COBALT	2.1 5		£ .	- 1-m - 1-m - 1-1 -	
COPPER	1.9 L				
IRON	3350 ==				_=
LEAD :	15 JV 14 2	·	. J	.es	. in white
MAGNESIUM [254 L				
MANGANESE	62.3		·		
MERCURY	0.05 U		-		
NICKEL	2.2 ប	·			
POTASSIUM	396 LCC		Ξ .		
SELENIUM	0.22 T				1 .
SILVER	0.65 T		=		1 -
SODIUM	10'8 A '''				:
THALLICM	0.22 J				
VANADIOM	5.3 L		<u>.</u> .		
ZINC	8.7				=
CYANIDE	0.27 σ				
				-	<u>-</u> .
* SOLIDS	90.7	-	===		

INORGANIC/ORGANIC COMPLETE SDG FILE (CSF) INVENTORY CHECKLIST

PA Lab ID: ARI	ORIGINALS	YES	NO	N/A
ab Location: SEATTLE, WA	CUSTODY SEALS	-	<u> </u>	
Region: 6 Audit No.: 25159/MFGZ66	1. Present on package?	x		
te_Submitted CSF? Yes No X		x		
Sox No(s): 1	FORM DC-2	-		
COMMENTS:	3. Numbering scheme accurate?	x		ĺ
/15. The airbill did not require receipt signature and	4. Are enclosed documents listed?	х		
date.	5. Are listed documents enclosed?	Х		
	FORM DC-1			
	6. Present?	x		
	7. Complete?	х		
	8. Accurate?	х		_
	CHAIN-OF-CUSTODY RECORD(s)			
	9. Signed?	x		
	10. Dated?	Х		
	TRAFFIC REPORT(s) PACKING LIST(s)			
	11. Signed?	x		
	12. Dated?	Х		
	AIRBILLS/AIRBILL STICKER			
	13. Present?	X	Ī	ĺ
	14. Signed?			x
	15. Dated?			Х
	SAMPLE TAGS			
	16. Does DC-1 list tags as being included?	x		
	17. Present?	x		
	OTHER DOCUMENTS			
	18. Complete?	x		٠,
	19. Legible?	x		
	20. Original?		х	
er for additional comments.	20a.If "NO", does the copy indicate where original documents are located?	x		
tited by: Mun & Druct	MERVIN DOUCET/ESAT DATA REVIEWER	Date	1,	/7/96
lited by:		Date	2	-
lited by:		Date	•	
Signature	Printed Name/Title	*	. —	
TO BE	COMPLETED BY CEAT			
Date Record by CEAT:	Date Entered: Date Reviewed:	-		
Entered by:			·- ·	- -
Reviewed by:			*-	



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6 HOUSTON BRANCH 10625 FALLSTONE RD. HOUSTON, TEXAS 77099

MEMORANDUM

Date:

1-16-1997

Subject:

Contract Laboratory Program Data Review

From:

Melvin L. Ritter, ESAT RPO, 6MD-HC

To:

L. Biasco , 6SF-RA

Site: WILCOX OIL

Case#: <u>25159</u>

SDG#: MFG-Z44

The EPA Region 6 Houston Branch ESAT data validation team has completed a review of the submitted Contract Laboratory Program (CLP) data package for the referenced site. The samples analyzed and reviewed are detailed in the attached Regional data review and assessment report for this case.

The data package was found to be:

- () Acceptable: No major problems with data package.
- (X) Provisional: Use of data requires caution.
 Data is acceptable for Regional use. Problems are noted in the review report.
- () Unacceptable: Some or all of data should not be used. Problems are noted in the review report.

Questions regarding the data review report can be addressed to me.

Attachments

cc: R. Flores, Region 6 CLP/TPO

M. El-feky, Region 6 Data Coordinator

Files (2)





LOCKHEED MARTIN SERVICES GROUP 10101 SOUTHWEST FREEWAY, SUITE 500 HOUSTON, TEXAS 77074

MEMORANDUM

DATE: January 7, 1997

TO: Dr. Melvin Ritter, ESAT RPO, Region VI

FROM: Dr. Tom Chiang, ESAF ETM, Region VI

SUBJECT: CLP Data Review

REF: TDF # 6-7111A, ESAT File No. I2073

Attached is the data review summary for Case #25159 SDG #MFGZ44 Site WILCOX OIL

COMMENTS:

I. CONTRACTUAL ASSESSMENT OF DATA PACKAGE:

The reviewer detected the following contractual noncompliance. The CCS report was not available at the time of this report preparation.

The laboratory failed to encase the sample tags in a clear plastic bag (ILM04.0, Exhibit F, F-13).

II. TECHNICAL/USABILITY ASSESSMENT OF DATA PACKAGE:

A total of 480 results were reviewed for this data package. The package is technically provisional for the problems summarized below.

- A. The reviewer qualified approximately nine percent of the results because of technical problems.
- B. The antimony matrix spike recovery failed to meet QC criteria.
- C. Four selenium analyses failed FAA QC criteria.
- D. Lead field duplicate results were inconsistent.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION 6

HOUSTON BRANCH 10625 FALLSTONE ROAD HOUSTON, TEXAS 77099

INORGANIC REGIONAL DATA ASSESSMENT

CASE NO. 25159 SITE WILCOX CIL	
LABORATORY ARI NO. OF SAMPLES 20	
CONTRACT # 68-D5-0134 MATRIX SOIL	-
SDG # MFGZ44 REVIEWER (IF NOT ESD) ESAT	
SOW# <u>ILM04.0</u> REVIEWER'S NAME <u>Linca Hoffma</u>	an
ACCT # 7FAXIN23 SF # FAXUZZ COMPLETION DATE January 7, 1	
	-
SAMPLE NO.: MFG-Z4/ MFG-Z48 MFG-Z52 MFG-Z56 MFG-Z6	
MFG-Z45 MFG-Z49 MFG-Z53 MFG-Z57 MFG-Z6	53
MFG-Z46 MFG-Z50 MFG-Z54 MFG-Z58 MFG-Z6	54
MFG-Z47 MFG-Z51 MFG-Z55 MFG-Z59 MFG-Z6	55

DATA ASSESSMENT SUMMARY

	ICP:	FAA	HG CYANIDE
HOLDING TIMES CALIBRATIONS BLANKS MATRIX SPIKES	O O	0	0 0 0 0 0 0
DUPLICATE ANALYSIS	<u>o.</u>	<u> </u>	
ICP QC	<u>M</u>		
FAA QC		<u>M</u>	*
LCS			
SAMPLE VERIFICATION	<u>o</u>		0
OTHER QC	<u> </u>	<u>M</u>	0 . 0
OVERALL ASSESSMENT	<u> </u>	_M_	0
	CALIBRATIONS BLANKS MATRIX SPIKES DUPLICATE ANALYSIS ICP QC FAA QC LCS SAMPLE VERIFICATION OTHER QC	HOLDING TIMES O O O O O O O O O O O O O O O O O O O	HOLDING TIMES O O CALIBRATIONS O O BLANKS O O MATRIX SPIKES M O DUPLICATE ANALYSIS O O ICP QC M FAA QC M LCS O O SAMPLE VERIFICATION O O OTHER QC O M

O = Data had no problems.

ACTION ITEMS: The sample tags were not encased in the required plastic bags.

AREAS OF CONCERN: The matrix spike recovery for antimony was less than 75 percent. Four selenium analyses had FAA analytical spike recoveries below 85 percent. The lead field duplicate results were inconsistent. One nickel analysis had a correlation coefficient greater than 20 percent.

NOTABLE PERFORMANCE:

M = Data qualified because of major or minor problems.

Z = Data unacceptable.

N/A= Not applicable

Case 25159 SDG MTGZ44 Site WTLCOX OIL Lab ARI

COMMENTS: The package consisted of data for 20 soil samples for total metals and cyanide analyses by ILM04.0. The sampler designated samples MFG-Z49/MFG-Z50, MFG-Z59/MFG-Z60, and MFG-Z65/MFG-Z65 as field duplicate pairs and sample MFG-Z44 as the QC sample. The laboratory met the 35-day turnaround time requirement but did not enclose the sample tags in plastic bags. Thirty-two percent of the reported results were above the CRDL's.

The laboratory incorrectly reported the lead results ,which was 55,000 mg/Kg, for sample MFG-Z58. On the Data Summary Table, the reviewer recorded the correct concentration.

The data package is technically provisional because of problems with matrix and FAA analytical spike recoveries, field duplicate differences, and inconsistent instrument readings. The technical usability of all reported results is indicated in the attached Data Summary Table.

An Evidence Audit was conducted for the Complete Sample Delivery Group File (CSF), and the Evidence Inventory Checklist is attached to this report.

NOTE: THE FOLLOWING REVIEW NARRATIVE ADDRESSES BOTH CONTRACTUAL AND TECHNICAL ISSUES. THE ASSESSMENT MADE FOR EACH QC PARAMETER IS SOLELY BASED ON THE TECHNICAL DATA USABILITY, WHICH MAY NOT NECESSARILY BE AFFECTED BY CONTRACTUAL PROBLEMS.

- 1. Holding Times: Acceptable. Contractual holding time and sample preservation criteria were met. Technical holding time criteria have not been established for soil samples.
- 2. Calibrations: Acceptable. All calibrations met contractual requirements. The CRDL standard results indicated that instrument performance near the CRDL's was acceptable.
- 3. Blanks: Acceptable. Preparation and calibration blanks met contractual requirements although the laboratory reported calcium, copper, vanadium, and zinc in the blanks. The copper and vanadium blank concentrations only affected sample results below the CRDL's. The following zinc results were above the CRDL's and affected as indicated by the blanks.

The results for samples MFG-Z44, MFG-Z49, and MFG-Z50 are high biased.

Case 25159 SDG MFGZ44 Site WILCOX OIL Lab ARI

3. Blanks, continued:

The results for samples MFG-Z45 and MFG-Z52 are considered undetected.

- 4. Pre-digestion/Pre-distillation Matrix Spike Recovery:
 Provisional. The laboratory reported an antimony matrix
 spike recovery that was below the QC limit, so the reviewer
 qualified as estimated and biased low all antimony results.
- 5. Duplicate Analysis: Acceptable. The laboratory reported duplicate differences above the SOW QC limits for aluminum and iron. Since the aluminum difference was only marginally high and the iron difference met technical QC criteria, no results were qualified.
- 6. ICP Quality Control:

<u>Serial Dilution:</u> Acceptable. The laboratory reported acceptable serial dilution differences.

Interference Check Sample: Acceptable. Acceptable ICS results indicated satisfactory interelement and background correction.

Coefficient of Variation: Provisional. The reviewer qualified as estimated the nickel result for sample MFG-265 because replicate ICP readings were inconsistent.

7. Furnace Atomic Absorption Quality Control:

FAA Analytical Spike Recovery: Provisional. The reviewer qualified as estimated and biased low the selenium results for samples MFG-Z58, MFG-Z59, MFG-Z60, and MFG-Z64 because FAA QC criteria were not met. The reviewer did not qualify six other selenium and two thallium results because the analytical spike recoveries were crly marginally below the QC limits.

<u>Duplicate Injection Coefficient of Variation:</u> Acceptable.
Replicate injections were consistent.

Method of Standard Addition: MSA analysis was not required.

Case 25159 SDG MFGZ44 Site WILCOX OIL Lab ARI

- 8. Laboratory Control Sample: Acceptable. Acceptable LCS results indicated satisfactory sample preparation and analysis.
- 9. Sample Verification: The reviewer detected a few reporting errors and contacted the laboratory for resubmission (see attached FAX Record Log).
- 10. Other QC:

Field Duplicate: Provisional. The reviewer qualified all lead results because two of the three field duplicate pairs had inconsistent lead results.

11. Overall Assessment: The data package is technically provisional for the following reasons.

The reviewer qualified all antimony and four selenium results because of matrix related problems.

The reviewer qualified one nickel result because of inconsistent instrument readings.

The reviewer qualified all lead results because of poor precision.

INORGANIC DATA QUALIFIER DEFINITIONS

The following definitions provide brief explanations of the ESAT-Region 6 qualifiers assigned to results in the inorganic data review process.

- Undetected at the laboratory reported detection limit (IDL).
- L Reported concentration is between the IDL and the CRDL.
- J Result is estimated because of outlying quality control parameters such as matrix spike, serial dilution, FAA spike recovery, etc.
- R Result is unusable. The transfer of the control o
- F A possibility of a false negative exists.
- UC Reported concentration should be used as a raised detection limit because of apparent blank contamination.
- * High blas. Actual concentration may be lower than the concentration reported.
- v Low bias. Actual concentration may be higher than the concentration reported.

DATA SUMMARY

Case No.: 25159

SDG. No.: MFGZ44

Reviewer: L. Hoffman

Laboratory: ARI

Matrix: SOIL

Unics: mg/Kg

	SED-OL PLAG	SEDO2-FLAG	SED03 FLAG	50004 TA	G 514005 FL	AG COM	MENTS -
epa tr #=>	MFG-Z44	MFG-Z45	MFG-Z46	MFG-Z47	MFG- Z48		
ALUMINUM	2200	1400	2170	2550	1610	<u></u> ·	
antimony	12.2 UJv	11.5 Wv	12.4 UJV	. 12.1. ₩⊻	12.4 UJV	- :	
ARSENIC -	1.3 L	0.93 5	2.1 L	3.9	0.90 L		1 5°
BARIUM .	21.4 L	15.4 D	30.9 £	- 35.8 L	15.3 L		
DERYLLIUM	0.24 U	0.23 Ū	_ 0.25 U _	0.24 U	0.25 ซ	ı	· · · · · · · · · · · · · · · · · · ·
CADMIUM	0.49 U	0.46 U	0.50 Ŭ	. G_48 C	0.50 U	:	4
CYPCIEM	406 L	368 L	808 L	12600	576 L		المنافية المنافية
CEROMIUM	S.6	3.3	4.0	6.1	3.9	•	
CCBALT	2.3 L	1.4 L	2.7 L	2.1 L	1.2 L		
COPPER	2.7 LUC	1.5 LUC	3.0 LT*	5.3 L	, 1 219, L _	**	<u></u> -
ieon !	4340	2880	4870	5690	2630		<u> </u>
LEAD	5.0 J	4.0 J	33.9 _ 3	. <u>11</u> 7 J	54.0 J		
Magnesium	333 L	- 247 L	425 L	6260	317 L	-	
MANGANESE	112	67.0	168	319	72.3	- e-	
MERCURY	3.05 U	0.05 U	0.05 U	ο_05 σ	o Toe n	2 11	·
NICKET	3.4 L	3.4 L	3.1 L	4.7 L	3.2 %		
POTASSIUM	373 L	190 L	362 L	. 436 L	294 1		· · · · · · · · · · ·
SELENIUM	0.24 U	9.23 U	0.25 U	0.24 T	្ល 0.24 ប		
SILVER	0.73 U	0.69 U	. 0.74 U	0.73 T	0_74 U		
SODIUM	12.2 U	11.5 σ	. 12.4 U	49.9 L	. 12.4 J		
THALLICM	0.31 L	0.23 L	0.25 Ü	0.29 L	0.24 J		
VANADIUM	6.5 LIV	4.5 Lïv	- 6.8 Liv	7.0 LJv	5.1 Liv		··
ZINC	7.6 J	6.2 UC_	11.6	31.7	11.6	:	:_
CYANIDE	0.30 U	0.30 T	0.31 U	0.31 U	0.31 U		
% SOLIDS	81.9	82.7	0.08	81-3	8 <u>.</u> 0 - 0		71. <u> </u>

DATA SUMMARY

Case No.: 25159

SDG. No.: MFGZ44

SOIL

Reviewer: 1 Hoffman

Laboratory: ARI

Macrix:

Units: xg/Kg

EPA TR #=>	SEDOG FLAG	SEP-OMETING	SED-08 FLAG		55-01 FLAG	COMMENTS
LPA TR #=>	MFG-Z49 	MFG-250 _	MFG-Z51	MFG-ZS2	MFG-253	
ALUMINUM	1850 1_1_	1790 .	2720	1670	3630	
antimony	12.0 UJV	= 12.0 UJv '	12.4 050	12.1 UJV	11.5 Wv	_
ARSENIC	! 3.3.5 	1.3 L	1.5 L	-1.4 2	1.5 %	
BARIUM	21.3 L .	24.0 L	-32.7 L	15.4 5	46.6	·
BERYLLIUM	0:24 U	- 0.24 U	- 3.25 U	0.24_C	ว.23 ซ	- · <u></u> - <u>-</u>
CAEMIUM	0.48 U	0.48 Ü	0.50 V	J.48 U	0.58 L	
CALCIUM	557 S	628 L	859 L	315 L	1590	
CERCMIUM	2.78	2.9	4.5	4.0	5.7	
CCBALT	1.5 L	1.9 %	1.2 (216.72) .	- 1,5 L	2.4 2	
COPPER	1.8 100		310 ವ		m 115.2 ≥ 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	크리 그리 그 그
I-CN	3400 -	3550	5000	3560	4850	<i>I</i> <u>= = </u> 1
LEAD	5.0 J	- 15.3 J	ি ইয়েৰে কী	4.6 5	26.3 3 7 7 1	
MAGNESIUM	324 L .	- 337 L	465 🗅	- 228 3 -	577 L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
MANGANESE	93.2	213	284	73.3	13 131 11 14 1-11	<u> </u>
MERCURY	0.06 J -	0.35 U	o.ós ʊ .	_ 0.05 U	2-06 U	1
NICKEL	3.a L	3.5 L	4.3 L	· 2.4 U	5.3 L	
POTASSIUM	280 %	. 323 L	417. 1	289 L	704 L	ાન હ્યું કરામી
SELENIUM	3.25 J	J.24 U	0.24 Ü	- 3.24 ປັ	3.24 U	27
SILVER	ງ.72 ປ ີ ໄ	ີ ວ.72 ປີ .	0.74 ปี	ວ.72 ປ	3.70 U	
SODICM	12.0 T =	22.3 σ	.12.4 U	12.1 3	11.67	
THALLIUM	0.25 I	J.24 L	9.24 U	. 0.24 U	026 L	e de la companya de l
VANADIEM	4.9 Līv	5.0 Līv	6.6 LJv	5.5 ਛੋਡਾ	3.7 L	
ZEXC	8.0 J^ _	a.ó ಸ್	21.7	6.0 EC	··· 24.3	
CYANIDE	0.30 \$. 0.30 U	0.32 ប	U 0.E.O	σ .30 σ	
* SCLIDS	81.6	82.5	⁻ 77.5	82	93. 4	

Case No.: 25159

Laboratory: ARI

SDG. No.: MFGZ44

Matrix:

SOIL

Reviewer:

L. Hoffman

Units:

mg/Kg

MFG-258 MFG-256 MFG-ZS4 EPA TR #=> 4060 90<u>9</u>0 3430 ALGMINGM 5580 3550 <u>11</u>.5 Wv 12_7_UJv 12.2 Juv ANTIMONY 11.0 DJv . 12.5 UJy 1.3 L 1.5 L 1.5 L 1.3 5 ARSENIC 34.8 L 39.0. BARIUM 53,2 3<u>1</u>.8 L 31.8 L 0.23 U 3.40 L 3,24 U 0.26 L BERYLLIUM 3.28 % _0.72_{_}L 0.51 T 0.49 U. 3.44 J 0.50 T CARMIUM - 1240 L 516 L 947 L 1750 1510 CALCIUM - 11.0 7.2 3,2 6.7 CERCMIUM 5.6 L 2.5 L 1.3 L CCBALT 3,3 % 4.6 L --.4 127 4.5 £ ..4.4 L COPPER 5.3 2 4570 11200 7430 5340 TRON 5.5 J . 115 J. 359 J 19.5 3 _ LEAD 1050 L 774 L 593 L 744 5 423 L MAGNESIUM 209 414 96.4 80.7 233 MANGANESE 0.06 T 3.05 T 0.18 0.36 T MERCURY ១.៦5 ប 10.1. 5.4 L 7.3 5 10.4 5.9 L NICKEL .. 580 L 1150 L 480 L 961 L 940 L POTASSIUM 3.25 U 0.23 U 0.26 UJv 0.24 U SZLENIUM 3.23 U 0.75 U a.59 T 3.66 U 0.75 IJ a.73 T SILVER 2330 14.2 L 17.8 L SCDIUM 20.5 % 17.7_5 3.27 L 3.25 U _ 1.3 ປັ 3.39 L T 25.0 THALLIUM 9 8 L 19.5-7.2 LJV ... 11.2 8.0 L VANADIUM 132 25.7 36.3 ZINC 34.8 23.5 3.31 U 0.29 T . 0.35 T 0.31 T CYANIDE 0.29 U 79.1 86.ì 72.4 % SOLIDS 95.4 _ 79.8

DATA SUMMARY

Case No.: 25159

SDG. No.: MFGZ44

Reviewer: L. Hoffman

Laboratory: ARI

Matrix: - SOIL

Vaits:

ing/Kg

(11년년 기년 기년(1

	_55-07 FLAG	55-08 flag _ :	55-11 FEAG :	55-12 Flag	55-13 FLAG	COMMENTS
SPA TR #=>	MFG- Z 59		MFG~Z63	MFG-264	MFG-Z63	
ALUMINUM	7060	\$ 720	2000	5350	<u>. 5110</u>	
ANTIMONY	11.9 JJv	11.5 🐠 🗀	10.7 JJv	11.8 UJv	12.0 UJv	·
ARSENIC	1,5 4	1.7 L ==	- 1.0 L	1.8 L	· · · · · · · · · · · · · · · · · · ·	1 miles
BARIUM	54.6	52.5	35.7 L	47.6	46.2 L	==
BERYLLIUM	0.31 L	0.23 U	0.21.U	J.25 L	0.24 U	
CADMIUM	0.47 J =	ງ. ÷6 ປ	0.43 U	- 0.47 U	0.48 U	·
CALCIUM	2830	2810	76 7 L	4950	4540	
CEROMIUM	11.7	9.2 ·	. 2:7 ···· -	7.7 -	··· 7.0	
CCBALT	3.1 %	2.4.L	1.3 L	3.0 L	3.0 L	
COPPER	5.9.	5.2	5.2 L	13.6	1 4	
IRCN	3790	570	2970	9570	-	
LEAD	25.5 🗓	57.9 - J. 👊	-25.9 J	251 J	260 Ĵ	
MAGNESIUM	963 L	9G2 L	338 L	957 L	1030 L	
MANGANESE	134	127	163	= 174 ···	164	
MERCURY	0.05 ಪ	0.05 T	o.05 T	0.38 L	J.09 L	-
NICKEL	5.8 L	5.4 L	2.1.U	3.6 L	3.9 LJ	
POTASSIUM	1070 5	778 L	377 L	795 L	762 L	
SELENIUM	3.22 ಫರv 🌅 🗀	- 3.24 TÖV		ງ.23 ໝູ້ 🚉	ο.23 σ	
SILVER	9.71 3	១.៩១ ប	. 0.64 U	0.71 U	ີ 0.72 ປ	
SODIUM	23.1.5	18.0 L	10.7 0	70.6 L	56.1 1	
THALLIUM	0.29 L	3.36 L	ວ.21. ຫ	0.39 L	0.35 L	
VANADIUM	15.6	13.5	4.0 Liv	16.8	14.7	· · · · · · · · · · · · · · · · · · ·
ZINC	26.2	24.1	50.7	7011	- 69.7	
CYANIDE	0.30 U	3.30 T .	J.28 U	0.30 σ	9.30 T	
!						-
* SOLIDS	. 83.S	32.7	86.4	83.1	83.6	<u></u>

INORGANIC/ORGANIC COMPLETE SDG FILE (CSF) INVENTORY CHECKLIST

Case No. 25159 SDG No. MFGZ44 SDG Nos. To Follow	y SAS No.	Date R	ec <u>12</u>	<u> </u>
EPA Lab ID: ARI	ORIGINALS	YES	NO	N/A
Lab Location: Seattle, WA	CUSTODY SEALS			
Region: 6 Audit No.: 25159/MFGZ44	Present on package?	х		
Re_Submitted CSF? Yes No X	2. Intact upon receipt?	х		
Box No(s): 1	FORM DC-2			
COMMENTS:	3. Numbering scheme accurate?		x	
3. The laboratory failed to paginate the page between pages 154	Are enclosed documents listed?		Х	
and 155. The reviewer added the appropriate page number to this page.	5. Are listed documents enclosed?	х		
	FORM DC-1			
 Page 316 was not listed on Form DC-2-2. The reviewer made the appropriate correction. 	6. Present?	х		ļ
14/15. The laboratory failed to sign and date Airbiil #7802823346.	7. Complete?	x		
however, the airbill does not provide a section for the laboratory	8. Accurate?	Х		
receipt date and signature.	CHAIN-OF-CUSTODY RECORD(s)			
	9. Signed?	х		
İ	IO. Dat	X		
	TRAFFIC REPORT(s) PACKING LIST(s)		_	
	11. Signed?	х		
	12. Dated?	Х		
	AIRBILLS/AIRBILL STICKER			
	13. Present?	_ X		
	14. Signed?		Х	
	15. Dated?		x	
	SAMPLE TAGS			
	16. Does DC-1 list tags as being included?	Х	_,	
	17. Present?	Х	_	
	OTHER DOCUMENTS	{		
	18. Complete?	Х		
	19. Legible?	X		
	20. Original?		X	
Over for additional comments.	20a.If "NO", does the copy indicate where original documents are located?	х		
Audited by: July 1997	Linda Hoffman / ESAT Data Reviewer	Date	01/02/	97
Audited by:		Date		
Audited by:		Date		
Signature	Printed Name/Title			
TO BE COMP	LETED BY CEAT	-		
Date Recvd by CEAT: Do	tte Entered: Date Reviewed:		•	=
Entered by:	 		-	
Reviewed by:			-	 .
Signature	Printed Name/Title			

In Reference to Case 25159/SDG MFGZ44
Page 1 of 2 pages
ESAT File No.: 12073

Contract Laboratory Program REGIONAL/LABORATORY COMMUNICATION SYSTEM

FAX Record Log

Date of FAX: January 7, 1997

Laboratory Name: ARI

Lab Contact: Jeff Reitan

Region: 6

Regional Contact: Linda Hoffman (ESAT)

FAX Initiated by: Region

In reference to data for the following sample number(s):

All samples in this SDG.

Summary of Questions/Issues:

- 1. The sample tags were not encased in the contractually required clear plastic bags (ILM04.0, Exhibit F, F-13, 5th bullet). Please acknowledge this requirement and note for the future.
- 2. On the SDG/TR Cover Sheet (p. 365), the last sample in the SDG is also listed as the SDG number. Please correct this discrepancy and resubmit page 365.
- 3. The SDG number was not recorded on the traffic reports under the "Lab Receipt Date" (ILM04.0, Exhibit B, B-6, 2nd paragraph from bottom of page). Please acknowledge and note for the future.
- 4. On the Form 1's, the "Date Received" is incorrect for the samples on pages 7, 8, 9, 10, 12, 13, 19, 20, 21, 25, and 26. The received date for these samples is 11/19/96, not 11/20/96. Please make the necessary corrections and resubmit the listed pages.
- 5. On Form 1 (p. 21), the lead result is incorrectly reported. The correct result should be 55,000, not 55,049. Please correct the lead concentration and resubmit page 21.

In Reference to Case 25159/SDG MFGZ44 Page 2 of 2 pages ESAT File No.: 12073

- 6. In the lead instrument raw data, time of analysis was not recorded for the initial and continuing calibration verifications and blanks (ILM04.0, Exhibit B, B-11, d, #9). Please add the time of each ICV, ICB, CCV, and CCB analysis to the lead instrument raw data and resubmit.
- 7. Please explain why the ICV/CCV concentrations in the cyanide raw data do not always agree with the concentrations reported on the Form 2's and make any necessary corrections and resubmissions.
- 8. The instrument ID was not recorded in the cyanide raw data (ILM04.0, Exhibit B, B-9, C.2.d and B-11, #7). Please record the instrument ID, as it appears on Form 14, on the first page of the cyanide raw data and resubmit.

The EPA expects the laboratory to look into items and submit data within seven days to Mahmoud El-Feky, U.S. EPA, 10625 Fallstone Road, Houston TX 77099.

Signature

01/07/97

Date

Distribution: (1) Lab Copy, (2) Region Copy

10101 S. W. Freeway, Suite 500, Houston, TX 77074 TEL: (713) 988-2983

FACSIMILE COVER SHEET

Please deliver the following pages to:
Name Jeff Reitan
Firm ARI
City Seattle State WA
Telephone 206-621-6490 Ext
FAX Telephone No. 206-621-7523 Ext.
Sender:
Name Linda Hoffman ESAT
Date <u>01/07/97</u>
Total Number of pages including this Cover Sheet 3
If you do not receive all the pages or if any pages are unclear, please call: (713) 988-2983.
MESSAGES:

FAX No. (713) 988-2994



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6 HOUSTON BRANCH 10625 FALLSTONE RD. HOUSTON, TEXAS 77099

<u>MEMORANDUM</u>
Date:1-16-1997
Subject: Contract Laboratory Program Data Review
From: Melvin L. Ritter, ESAT RPO, 6MD-HC
To: L. Biasco , 6SF-RA
Site: WILCOX OIL
Case#: <u>25159</u>
SDG#: FF-G24

The EPA Region 6 Houston Branch ESAT data validation team has completed a review of the submitted Contract Laboratory Program (CLP) data package for the referenced site. The samples analyzed and reviewed are detailed in the attached Regional data review and assessment report for this case.

The data package was found to be:

- (X) Acceptable: No major problems with data package.
- () Provisional: Use of data requires caution.

 Data is acceptable for Regional use. Problems are noted in the review report.
- () Unacceptable: Some of all of data should not be used. Problems are noted in the review report.

Questions regarding the data review report can be addressed to me.

Attachments --

cc: R. Flores, Region 6 CLP/TPO

M. El-Teky, Region 6 Data Coordinator

Files (2)





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6 HOUSTON BRANCH 10625 FALLSTONE RD. HOUSTON, TEXAS 77099

MEMORANDUM

Date:

1-21-1997

Subject: Contract Laboratory Program Data Review

From:

Melvin L. Ritter, ESAT RPO, 6MD-HC

To:

L. Biasco , 6SF-RA

Site: WILCOX OIL

Case#: __25159

SDG#: FF-G02

The EPA Region 6 Houston Branch ESAT data validation team has completed a review of the submitted Contract Laboratory Program (CLP) data package for the referenced site. The samples analyzed and reviewed are detailed in the attached Regional data review and assessment report for this case.

The data package was found to be:

- Acceptable: No major problems with data package. ()
- (X) Provisional: Use of data requires caution. Data is acceptable for Regional use. Problems are noted in the review report.
- Unacceptable: Some or all of data should not be used. Problems are noted in the review report.

Questions regarding the data review report can be addressed to me.

Attachments

R. Flores, Region 6 CLP/TPO

M. El-feky, Region 6 Data Coordinator

Files (2)



LOCKHEED MARTIN SERVICES GROUP 10101 Southwest Freeway, Suite 500 HOUSTON, TX 77074

MICH	$I \cap D$	7. 3.71	MUIC
шш	\mathbf{r}	771V.	D UPL

DATE:

January 10, 1997

TO:

Melvin Ritter, ESAT RPO, Region VI Dr.

FROM:

Tom C. H. Chiang, ESAT ETM, Region VI

SUBJECT:

CLP Data Review

RFF:

TDF # 6-7113A

ESAT # 0-1780

Attached is the data review summary for Case #

SDG #_

COMMENTS:

I. CONTRACTUAL ASSESSMENT OF THE DATA PACKAGE

A. The data package contained the following contractual noncompliance as determined by the hard copy data review and the CCS audit.

> The laboratory extracted BNA sample FF-G06RE 29 days after sample receipt (OLM03.0, D-18/SVOA, 8.4.1). All results were qualified for this sample because of the excessive holding time.

- B. The data package contained the following contractual noncompliance as determined by the hard copy data review but not by CCS.
 - Pest/PCB method blank PBLKSC had a peak on the DB-17 column above the CRQL that interfered with the detection of endosulfan sulfate (OLMO3.0, D-73/PEST, 12.1.2.4). This deficiency caused the raised quantitation limits for endosulfan sulfate in samples FF-G15 and FF-G23.
 - The data package arrived three days late.

II. TECHNICAL/USABILITY ASSESSMENT OF THE DATA PACKAGE

A total of 2,500 results were reviewed for this data package. The data package is technically provisional and technical deficiencies are listed below.

- One BNA sample was extracted 29 days after sample collection.
- 2. Four VOA and eight BNA samples had low internal standard responses.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION 6

HOUSTON BRANCH 10625 FALLSTONE ROAD HOUSTON, TEXAS 77099

ORGANIC REGIONAL DATA ASSESSMENT

CASE NO. 25159 LABORATORY AATS CONTRACT# 68-D5-0022 SDG# FFG02 SOW# RAS SOW OLM03.2 ACCT# 7FAXJN28 SF# FAXUZZ	SITE Wilcox Oil NO. CF SAMPLES 20 MATRIX Soil REVIEWER (IF NOT ESD) ESAT REVIEWER'S NAME Maris Missler COMPLETION DATE January 10, 1997
SAMPLE NO. FF-G02 FF-G06 FF-G03 FF-G07 FF-G04 FF-G08 FF-G05 FF-G09	7 FF-G11 FF-G15 FF-G21 3 FF-G12 FF-G16 FF-G22
DATA ASSES	SMENT SUMMARY
1. HOLDING TIMES 2. GC/MS TUNE/INSTR. PERFORM. 3. CALIBRATIONS 4. BLANKS 5. SMC/SURROGATES 6. MATRIX SPIKE/DUPLICATE 7. OTHER QC 8. INTERNAL STANDARDS 9. COMPOUND ID/QUANTITATION 10. PERFORMANCE/COMPLETENESS 11. OVERALL ASSESSMENT O = Data had no problems.	
<pre>M = Data qualified because Z = Data unacceptable.</pre>	of major or minor problems.

ACTION ITEMS: BNA sample FF-G06RE was extracted 19 days past the holding time requirement. One Pest/PCB method blank had a peak that interfered with the detection of endosulfan sulfate above the CROL on one column.

NA = Not applicable.

AREA OF CONCERN: The extraction holding time was excessive for BNA sample FF-G06RE. A contaminant in the method blank obscured the detection of endosulfan sulfate in two Pest/PCB samples. Acetone failed technical calibration criteria. Four VOA and eight BNA samples had low internal standard responses. Results were inconsistent for a pair of field duplicates. The two column quantitation results differed by more than 25 percent for three Pest/PCB samples. The data package arrived three days late.

COMMENTS/CLARIFICATIONS REGION 6 CLP QA REVIEW

CASE 25159 SDG FFG02 SITE Wilcox Oil LAB AATS

The following is a summary of sample qualifiers used by Region 6 in reporting this CLP data:

No.	<u>Acceptable</u>	Provisional	Unacceptable
VOA	1 <u>4</u>	6	
SNA	11	9	
PEST	16	4	

COMMENTS: The c se consisted of 20 soil samples for complete RAS organic analysis. The OTR/COC Record designated sample FF-G02 for MS/MSD analyses and samples FF-G07/FF-G08, FF-G17/FF-G18, and FF-G22/FF-G23 as field duplicate pairs. The laboratory analyzed at low levels the VOA/BNA soil samples.

The data package contained the following contractual non-compliances.

BNA sample FF-G06RE was extracted 19 days past the contractual holding time limit. Only sample FF-G06RE is billable even though the laboratory also submitted data for the original analysis FF-G06.

The Pest/PCB method blank PBLKSC had a peak interfering with the detection of endosulfan sulfate above the CRQL on one column.

The data package arrived 3 days late for the contractual 35-day turnaround time.

VOA Samples FF-G11, FF-G13, FF-G15, and FF-G22 and their reanalyses had low internal standard responses. The reanalyses should be used for all except sample FF-G15.

BNA The extraction holding time for sample FF-G06RE was excessive (29 days past collection). Samples FF-G09, FF-G15, FF-G16, FF-G17, FF-G18, FF-G21, FF-G22, and FF-G23 and their reanalyses had low internal standard responses. To minimize data qualification, the reviewer recommends using some results from the original analysis and some from the reanalysis depending on the associated internal standard performance.

Pest/PCB An interfering contaminant in the method blank obscured the detection of endosulfan sulfate in samples FF-G15 and FF-G23.

CASE 25159 SDG FFG02 SITE Wilcox Cil LAB AATS

Comments (continued)

Acetone, methylene chloride, phenanthrene, pyrene, chrysene, benzo(ghi) perylene, chlordanes, endrin, heptachlor epoxide, endosulfan sulfate, endrin ketone, endrin aldehyde, and endosulfan II were reported in a few samples above the CRQL's. Some results are provisional for six VOA, nine BNA, and four Pest/PCB samples because of problems with holding time, calibration, blank contamination, field duplicate consistency, internal standard responses, and compound quantitation.

The technical usability of all reported sample results is appropriately indicated by ESAT's final data qualifiers in the attached Data Summary Tables. An Evidence Audit was conducted for the Complete Sample Delivery Group File (CSF), and the Evidence Inventory Checklist is attached to this report.

NOTE: THE FOLLOWING REVIEW NARRATIVE ADDRESSES BOTH CONTRACTUAL AND TECHNICAL ISSUES. THE ASSESSMENT MADE FOR EACH QC PARAMETER IS SOLELY BASED ON THE TECHNICAL DATA USABILITY, WHICH MAY NOT NECESSARILY BE AFFECTED BY CONTRACTUAL PROBLEMS.

1. Holding Times: Provisional. All samples met the contractual holding time requirement except as follows. No technical holding time criteria exist for soil samples.

BNA sample FF-G06RE was extracted 29 days after collection and receipt. In the reviewer's opinion, all results are estimated and biased low because of the excessive holding time.

- 2. Tuning/Performance: Acceptable. The BFB and DFTPP analyses met GC/MS tuning criteria. The VOA and BNA sample analyses were within 12 hours of the respective BFB/DFTPP analyses. The Pest/PCB analyses met performance guidelines.
- 3. Calibrations: Provisional. Target compounds met contractual calibration criteria. The acetone result is estimated in VOA sample FF-G17 because of a technical %D calibration deficiency.

Pest/PCB The reviewer was unable to reproduce the following calibration results on both analytical columns based on the raw data submitted:

the TCX and DCB initial calibration factors; and

the TCX and DCB calculated amounts in all INDAM/INDBM calibration verification analyses.

CASE 25159 SDG FFG02 SITE Wilcox Oil LAB AATS

3. Calibrations, Pest/PCB (continued)

The results reported by the laboratory differed consistently by a factor of two from the reviewer-calculated ones. The reviewer did not qualify results because the reported %RSD and %D values were not affected. However, the laboratory was contacted for clarification of this discrepancy.

4. Blanks: Provisional. The VOA and BNA method and storage blanks met contractual requirements.

BNA The method blanks contained phthalates below the CRQL's. In the reviewer's opinion, all "B"-flagged laboratory results should be considered as undetected (U) because the sample concentrations were less than 10X the associated blank concentrations.

Pest/PCB Soil method blank PBLKSC contained a peak above the CRQL that interfered with the identification of endosulfan sulfate on one column. The reviewer qualified as undetected the endosulfan sulfate results in associated samples FF-G15 and FF-G23 because of possible laboratory contamination.

In the reviewer's opinion, the following results should be used as raised quantitation limits because of the presence of the analyte in the associated method blanks (below the CRQL's) on one or both columns:

endrin aldehyde in sample FF-G12; and

y-chlordane in sample FF-G17.

The y-chlordane result in sample FF-G18 is biased high and "B" flagged because of possible laboratory contamination.

5. System Monitoring Compounds (SMC)/Surrogates: Acceptable. The SMC and surrogate recoveries met QC criteria except as follows.

BNA Sample FF-G06 had high recoveries for two base-neutral surrogates. The re-extraction had acceptable recoveries and should be used.

Samples FF-G17RE, FF-G18RE, FF-G21RE, and FF-G22RE had high recoveries for two base-neutral surrogates. No results were qualified for the high recoveries as no analytes were detected above the CRQL's in these samples.

CASE 25159 SDG FFG02 SITE Wilcox Oil LAB AATS

5. System Monitoring Compounds (SMC)/Surrogates (continued)

Pest/PCB All reported surrogate recoveries were a factor of two lower than the reviewer-calculated ones. This problem is a consequence of the incorrect calibration factors reported for the initial calibrations (see section 3). All surrogate recoveries were within QC limits based on the reviewer's calculations.

6. Matrix Spike/Matrix Spike Duplicate: Acceptable. The MS/MSD analyses met recovery and precision requirements for all fractions.

7. Other QC:

Field Duplicates: Provisional. The acetone and methylene chloride results are estimated in field duplicates FF-G17 and FF-G18 because of inconsistent concentrations (differ by a factor of two or more). Other field duplicate results were consistent.

8. Internal Standards: Provisional. The internal standard (IS) responses and retention times were within the QC limits with the following exceptions.

VOA Samples FF-G11, FF-G13, FF-G15, and FF-G22 were reanalyzed because of low IS responses. The reanalyses had low but improved responses for samples FF-G11, FF-G13, and FF-G22, so the reanalysis data should be used. The original analysis data should be used for sample FF-G15.

Results are estimated and quantitation <u>limits</u> biased low for analytes associated with the following TS's because of the low TS responses:

<u>Sample</u>	IS
FF-G11RE	IS3
FF-G13RE	IS1, IS3
FF-G15	IS2, IS3
FF-G22RE	IS3

BNA Sample FF-G06 had low internal standard responses, but the reanalysis had acceptable responses, and data should be used. Sample FF-G02MSD had one low IS response, but reanalysis was not required.

CASE <u>25159</u> SDG <u>FFG02</u> SITE <u>Wilcox Oil</u> LAB <u>AATS</u>

8. Internal Standards, BNA (continued)

Samples FF-G09, FF-G15, FF-G16, FF-G17, FF-G18, FF-G21, FF-G22, and FF-G23 and their reanalyses had outlying IS responses. To minimize data qualification, the reviewer recommends using some results from the original analysis and some from the reanalysis depending on the associated IS performance. The results designated for use are indicated on the attached data summary tables.

The reviewer qualified results as estimated and quantitation limits biased low for analytes associated with the following IS's because of the low IS responses:

<u>Sample</u>		IS		
FF-G09	IS6			-
FF-G15	IS4,	ISS,	IS6	
FF-G16	IS4,	IS5,	IS6	_
FF-G17	IS5,	IS6		
FF-G18	IS5,	IS6	-	
FF-G21	IS5,	IS6		
FF-G22	IS4,	IS5,	IS6	
FF-G23	IŞ5,	IS6	-	

9. Compound Identity/Quantitation: Provisional. Acetone, methylene chloride, phenanthrene, pyrene, chrysene, benzo(ghi)-perylene, chlordanes, endrin, heptachlor epoxide, endosulfan sulfate, endrin ketone, endrin aldehyde, and endosulfan II were reported in a few samples above the CRQL's. Compound identification and quantitation met contractual guidelines for the VOA and BNA samples. GC/MS confirmation was not feasible for the Pest/PCB positive results.

Pest/PCB The "P" flagged results above CRQL's are estimated in samples FF-G15, FF-G17, FF-G18, and FF-G23 because the quantitation results between the two columns differ by more than 25 percent.

10. Performance/Completeness: Acceptable. The laboratory response to the CCS request was received and should be used. The data package was complete with minor deficiencies. The laboratory was contacted for correction and resubmission (see attached FAX Record Log).

CASE 25159 SDG FFG02" "SITE WILCOX Oil LAB AATS --

11. Overall Assessment: Data are acceptable for 14 VOA, 11 BNA, and 16 Pest/PCB samples.

VOA Some results are estimated for samples FF-G11RE, FF-G13RE, FF-G15, FF-G17, FF-G18, and FF-G22RE because of a calibration deficiency, inconsistent field duplicate results, and low internal standard responses.

BNA Some results are estimated for samples FF-G06RE, FF-G09, FF-G15, FF-G16, FF-G17, FF-G18, FF-G21, FF-G22, and FF-G23 because of a holding time problem and low internal standard responses.

Pest/PCB Some results are estimated for samples FF-G15, FF-G17, FF-G18, and FF-G23 because of blank contamination and compound quantitation deficiencies.

ORGANIC DATA QUALIFIER DEFINITIONS

The following definitions provide brief explanations of the ESAT-Region 6 qualifiers assigned to results in the Data Summary Table.

- U Not detected at reported quantitation limit.
- N Identification is tentative.
- J Estimated value.
- R Unusable.
- Migh biased. Actual concentration may be lower than the concentration reported.
- y Low biased. Actual concentration may be higher than the concentration reported.
- F+ A false positive exists.
- F- A false negative exists.
- B This result may be high biased because of laboratory/field contamination. The reported concentration is above 5X or 10X the concentration reported in the method/field blank.
- **UJ** Estimated quantitation limit.
- T Identification is questionable because of absence of other commonly coexisting pesticides.
- * Result not recommended for use because of associated QA/QC performance inferior to that from other analysis.

Laboratory: AATS

SDG:

FFG02

Reviewer: M. Missler

Matrix: SOIL

Units:

.1ā/Ķā

	[FLA	.GFLAG	FLAG	FLAC		3FLA	G	AG
EPA SAMPLE NUMBER:	560-01 FF-G02	SED-02 FF-G03	560-03 FF-G04	SED-04 FF-G05	500-05 EE-GO6	560-06 FF-607	560-07 FE-G08	
Chloromechane	! ! 12 J	12 U	.13 U .	12 U_	13.0.	13_0,	_ 13 U	S - 50
Eromomethane =	i 12 o	. 12 0	13 U.	12 U.	13 JT	13 U		
Vinyl chloride	1.2 U	12 U	13 U	12 0	13 U	13 0		
Chloroethane	12 5	12 J	.13 U	12 J	_ 1.3 .U.	1,3 U	<u>, 13</u> . σ	
Methylene chloride	1 1		. 2 J	2J		_ 13 T	2 J	•
Acecone	12 ប	_1 Z . J	. 13 U	12 U	13 Ų	,13 U	13_0_	
Carbon disulfide		12 9	- 13 U	12 U	13 U	. 13 🛡	13 T	
1,1-Dichloroethene	12 0	12 J	.: 13 U		13 0	13 0 .		
1,1-Dichloroeshane	12 J .	12 U	13 U.	.12 <u>U</u>	, 13 U	.13 U	<u>1</u> 3 U	
1,2-Bichloroethene (total)	12 5	12 U	13 U	12 U	13 0	13 U	. 13 0	_
Chloroform	12 5	12 J	.13 0	12 U	- 13 U	13 U	13 U	
1,2-Dichlorcethane (12 ਹ	12 J	13 U	. 12 U	13 0	13 U	-	
2-Butanone	12 J	12 C	13. U	12 ປ	137	. 13 J	<u> 13 </u>	· · · · · · · · · · · · · · · · · · · ·
1,1,1-Trichlorpethane	12 T.	. 12 U .	13 U	12 T	13 J	.3 t	_ 13_0	
Carbon tetrachloride	12, U .	12 U -	13 U	1.2 U	13 V	13 U	13 U	-
Bromodichloromethane ;	12 5 -	12 3	: 13 U	12 U	13.U	13 U	13 0	
1,2-Dichloropropane	12 3	12 7	: 13 U	. 12 U	T3 A	13 U		<u> </u>
cls-1,3-Dichloropropene	12 3	_ 12 3	· 13 Ū	12 U	13_U -	13 .0 .	13 0	
Trichlorcethene	12 5	12 J	13 U	12 0		13 U	13 0	
Dibromochloromethane (12 U	- 12 U	13 U	12 0			. 13 0	
1,1,2-Trichloroethane	12 0	12 U	13 0	12 J	.13 0	13 U	. 13 ប	
2enzene [<u>. 12 U</u>	13 U	12 🗓 .	13 U	13 U	13 T	
trans-1,1-Dichloropropene	12 U	12 J	13 U	12 U	13 U	.13.0	13 U	
Bremoferm ·	12 0	12 Y	:13 U	12 U	13 0	13 0	13 0	
4-Methyl-2-pentanone	13 A .	12 U	13 U	12 U	13 U	. 13 U	13 0	2
2-Rexanone	12 ປ	-12 U	13 0	.12 J	13 U .	13 U	13 0	
Tetrachloroethene	12 U	12 0*	. 13 U	12 U	13 U	13 J	13 0	• •
1,1,2,2-Tetrachlorcethane	- 12 ប	- 12 J	33 T	.12 U	13 U		13 U	
Toluene	12 J	12 U	13 U	12 U	13 U	13 U	13 0	
Chlorobenzene [12 0 .	12 U _	=13 U	12 U	13 Ū .	13 U	13 U	-
Ethylbenzene	12 U	- 12 U	13 U	12 U	13 U	13 O	13 Ū	
Styrene	12 J	12 0	13 U	12 U	13 U	. 13 U	13 T	
Xylenes (total)	12 U	12 5	13 U	-12 U	13 U	13 U	· 13 U	
	5	5	5	- 5	5	5	5	
Sample wc (g): {	3	3	3	э				
%Moiscure:	18	15	21	19	22	25	23	-
Dilution Factor:	1	1	1	1	· · 1	1 .	ı	
Level: [LCW	LCW	LOW	LOW	LOW	LCW	LCW	
Number of TIC's: {	1	. 1	. 1	1	. 1	0	0	
1	•	- -	-	-				

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

Tase No.: 25159

SDG:

FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix:

SOIL

Jaics:

ug/Kg

	Fla	.GFL	AGEL	AGFL			.GFI_AG
EPA SAMPLE NUMBER:	SED-08 FF-009	SED-09	55-01 FF-G11	SSO()	95-02 72-012	55-03 FF-G13	FF-G13RE
Chloromethane	14 U	12 U	12 U	- 12 U	້	12 0	- 12 DJv
arcmomethane .	14 U	12 J	12 0	+12 U	⊋ U		• 12 UJv
Vinyl chloride	14 U	12 U	12 U	±2 ਹ.	, 12 t	<u>;2</u> [U	- 12 BJV
Chloroethane	14 U	12 👨		<u> </u>	:2 T		- 13 m/
Methylene chloride	5 J	12 J.	5	+ 12 ਹ	בב ער ַ	12 0	
Acetone	14 U	12 U	. 12 U	. . 12.0	. <u>.:</u> 2 ʊ `	12 U	- 12 DJv
Carbon disulfide	14 U	12 U	. 12.U	_	. 12 0	. 12 U	• 12 UV • 12 UV
1,1-Dichloroethene	14 0	12 0	12 U		12 T T =:		A Company of the Comp
1.1-Dichloroethane	14 0	12 U	. 12 U	* 12 U	U	-	. 12 000
1,2-Dichloroethene (total)	14 U	12 U	12 U	• 12 5	12 T 12 T	12 U	• 12 UJV • 12 UJV
Chloroform	14 0	. 12 0	12 0	- 12 J	12 U		
1.2-Dichloroechane	14 U	12 U	12 0	<u> 12</u> 0	12 0		
2-Butanone	14 U	12 U	12 5	.= 12 J = 12 J	ຸ 12 ປ 12 ປ	12 U 12 U	* •
1,1,1-Trichloroethane	14 U	12 U 12 U	_ 12 U		- 12 g	12 U_ 12 U	2
Carbon cetrachloride	14 U	12 0		-,- 120			
Bromodichloromethane	14 U	12 U	1.2 ប្	*12 U	12 <u>U</u>	<u>12</u>	
1,1-Dichloropropane .	14 U	12 7	12 U	* IZ U	. 12 U	12 U	
cis-1,3-Dichloropropene	14 U	. 12.U.	12 0	<u> 12 U</u>	<u>1,2</u> ប	12 0	- 12 U
Trichloroethene	14 U	12 U	12 U	• 12 0	:2 0	. 12 U	
Dibromochloromethane [14 U	12 J	12 U		12 U	12 0	
I,1,2-Trichloroethane	· 24 0	12 .U	12 U	12 U	. <u>1</u> 2 Մ	12 U	<u>* 12 U </u>
Benzene	14 U	12 T	. 12 U		12 U	12 U	
trans-1,3-Dichloropropene	14 U	12 U	12 U		<u>12 U</u>	12 Ŭ	• 12 U
Bromoform :	14 U	12 T	12 U	- 12 0	12 0	<u>12</u> T	
4-Methyl-2-pentanone	14 U	12 U		* 12 050		12 U	
Z-Hexanone	14 U	12 U		* 12 UJV	-	. 12 U	
Tetrachloroethene ;	14 U	_ 12 0	12 0	- 12 000			
1,1,2,2-Tetrachloroethane	14 U	1.2 U	12 T		7-	12 0	
Toluene	14 U	12 U	12 T			12 0	 -
Chlorobenzene ;	14 U	12 17	12 U	* 12 GGV	12 0	- 12. T	* 12 UUV
Ethylbenzene	14 U	12 Ū	12 U	• 12 UJV	, 12 T	12 U	
Styrene	14 U	12 U	. 12 Ŭ	* 12.03v	r 12 U	12 U	·
Xylenes (total)	14 U	12 U	12 U	* 12 00v	12 0	12 0	* 12 UJV
Sample wc (g):	5	s	s	, 5 .	5	, 5	5
Moiscure:		18	19	. 19.	20	14	14
Ī						-	÷.
Dilution Factor:	_ 1	1	1		. I	1	1
Level:	LOW WOJ	LOW	LOW	LOW	LOW	LOW	· CW
Number of TIC's:	a	o	0	O	0		, 1

Note:

For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

Case No.: 25159 ...

SDG: FFG02

_ aviewer: M. Missler

Laboratory: AATS

Matrix:_ SOIL -

Units: __ ug/Kg

Laboratory: AATS		Matrix:	SOIL -	-	Units:	. ug/Kg	
						WHITE	S
			•		_	WHILE	_
						\	
VOLATILES]FLAG_	Fīag_	FLAG_	FLAG			FLAG
	1 55-64	55- <i>0</i> 5 .		55-06_ FF-G16	55-07	55-08	55-11
EPA SAMPLE DUMBER:	FF-GIA	FF-G15 _ F	F-GLSRE	FF-G16	FF-G17	- FF-G18	FF-G21
	1						
Chloromechane	12 U	11 U	11.0. *		12 U.	12 U	12 U .
Bromomethane	12-5	11" 0	21 7	13 U	12 U	_ 12 U _	.=12 U
Vinyl chloride	[12 J .	_ii U	. 11 0 *.	13 U	12 U		12 U
	i						
Chlorosthane	12 0	_ 11 U	11 U 🙎	13 U	12 0	12_TL	12 U
Methylene chloride	12 U	2 5]			23 J	12 05 \	- 12 U
Acetone	! 12 T	_ 11_U	±1 o *	. ,בב,	(48 J	12 WJ /	1.2 Ū
	1					·	
Carbon disulfide	12 ប	11 U_	. 11 U *	- 13 0	12 T	. 12 U	12 U
1,1-Jichloroethen s	12 0	11 U	11 U •	13 σ	_ 12 Ŭ	12 U	12 U
l,l-Dichloroethane	12 0 -	11 U	"11 U. *	13 U	12 U	<u>z:12</u> U	ຼ 12 ປັ
	i						
1,2-Dichloroethene (total)	12 0	11 U	11_A +	_ 13 U	12 U	12 U	12 U
Chleroform	ני בני	.II U -			. 12 U	12 0	12 U
1,2-Dichloroethane	12 U	11 J	11 U =	- 13 U	1 2 0	12 T	12 U
	!						
2-Bucanone	12 0	11 U	. 110 -	.3 U	. 12 T	12 U	12 T
1,1,1-Trichloroethane	12 ປັ	. 11 UUV -	11 U 🐣	13 U	. 12 ປ	12 <u>. U</u>	. <u>12 U</u>
Carpon tetrachloride	្ 12 ប	11 UJV .	11 0 *	ຼ 23 ປ	12 U	12 U	≟12 Ŭ
	1						
Eromodichloromechane	12 0	11 JJv	י עוו י	13 JU	. 12 U	12 U	12 U
1,3-Dichloropropane	12 0	11 UJV	-11 U •	13 U	12 U	12 T	<u>12</u> U
cis-1,3-Dichloropropene	12 T	_ 11 UJV.	11 U *	13 U	12 U	1.2 U	12 U
Trichlorcethene	1.2 U .	. 11 Wv	11 0 *	13 U	12_U	. 12 0	.12 ប
Dibromochloromethane	12 3	11 UJ v	11 U *	್ಷ-13 ರ	12 U	. 12 U	
1,1,2-Tricaloroethane	12 U	11 UJv	11 U * "	13 σ	1,2 ,U	.12 U	12 U .
!							
Senzene	12 U.,	II WV	11 U 🛨	13 .U	. 12.0	12 U	12 U
crans-1,3-Dichloropropene	12 ט	11 UJV -	. 11 U ▼	13 T	. 12 U	. 12 U	. 12 U
Bromoform	12 U	11 UJv	11 D 🔹	. 13 T	1,2 T	12 · U	12 Ŭ
				•			
4-Methyl-2-pentanone	12 T	II GUV	11 U +.	:3 U	12_び	12 T	1.2 U
2-Haxanone	12 U	11 UUV	11 0 🔩	_ 13 ប	12 U	. 12 ປັ	12 U
Tetrachlorcethene	12 U	11 JJv	11 U *	13 J	12 U	12 U .	12 U_
1.1.2.2-Tetrachlorcethane	12 3	11. UJv	11 U 🔻	13 U .	12 U	12 J	_12 Ŭ
Toluene	12 U	_11 UJV	. "11 0 • .	13 J	- 12 .T	-12 IJ	12 U .
Chlorosenzene	12 U	11 Wv	- 11 U .*	13 J	12 U	12 U	.12 ປັ
Ethylbenzene	12. Ů	11 UJv	11 U +	13 U	12 U	. 12 U	_ 12 U _
Styrene	12 0	11 UJV	11 U *	13-U	12 U	12 T	12 U .
Xylenes (total)	12 U	11 Wv	11 0 . *	. 13 U	12 U	12 U	. 12 U
•							
i							
Sample wt (g):	5	5	5	5	. 5	5	5
	_						
*Moisture:	18	13	. 13	24 .	18	18	18
	_	-	-				
Dilution Factor:	1	1	1	1	1	1	1
:	 	-				_	
Level:	LCW	LCW	LOW	LOW	LOW	LOW	LOW
	_ ==- -	== -	- -				
Number of TIC's:	o o	0	C	C	9	0	0.

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

25159

Laboratory: AATS

SEG:

Matrix:

FFG02 SOIL

M. Missler Reviewer:

Units: ug/Kg

3

÷

FLAG 3513 5512 FF-022 FF-G23 SF-G22RE EPA SAMPLE NUMBER: 12.0 12 U-12 U 12 g ~ Chloromethane 12 J 12 0 Bromomethane 12 0 / .12 ਹ Vinyl chloride 12 U 12 J 12 U 12 U Chloroethane 12 T 🗸 12 U Merhylene chloride 5 12 UV 12 U 12 U Acetone 12 UV. 12 II 12 U Carbon disulfide 12 U 12 U 12 U 1,1-Dichlorcethene ע ט ב<u>ז ע</u> 12 U 12 U 1,1-Dichloroethane 12 TJ 12 T 12 U 1,2-Dichloroethene (total) 12 U v 12 U 12 U Chloroform 12 U 12 U 12 U 1.2-Dichloroethane 12 J / 12 U 12 U = 2-Bucanone 12 UV 12 J ... 12 J 1,1,1-Trichloroethane 12 U V 12 J -12 U Carbon tetrachicride 12 U 🗸 12 U 12 5 Bromodichloremethane 12 ぴレ 12 J 12 Ū 1.2-Dichloroprogame 12 U V 12 U 12 U cis-1,3-Dichloropropene 12 U 🗸 :2 U 12 U 12 U -Trichlomoethene 12 U 12 U Dibromochloromethane 12 U V 12 U 1,1,2-Trichlorcethane 12 U 12 0 12 U 12 U * Senzere 12 U 12 U # 12 U trans-1,3-Dichloropropene 12 U 12 U Bromoform 12 0 🗸 12 UJv 12 U * :/4-Methyl-2-pentanone: 12 0 12 U 12 UJv 2-Нежапопе 52 ほノ 12 JJv y Tetrachloroethene 12 U 12 JV 12 U 12 UV 12 0 / 12 UJv /Joluene 12 U 12 UJv 12 U Chloropenzane 12 0 / 12 UJv ' <u>Ethylbenzene</u> 12 U 12 U 🗸 12 UJv 12 U /Styrene 🐱 12 U/ 12 U 12 UJv Xylenes (total) 5 Sample wc (g): 5 18 18 *Moisture: 1 1 1 Dilucion Factor: LCW LOW LOW Level: 0 Number of TIC's:

> For the results listed in the Data Summary Table. ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate Note:

the technical usability of the reported results.

SDG: =

FFG02

evlewer: M. Missler

Laboracory: AATS

--- Macrix:

SOIL

... _ Gnits:

ug/Kg

SEMIVOLATILES	l FLAG	· PLAG	= FLAG	i a e pel	AG	AG FLAG	FLAG
EPA SAMPLE NUMBER:	560.0(DED-03	500-04 FF-005	SEO-05	FF-GG6RE	5€D-6€- FF-G07
	1					_	
Phenol	400 U	390 U	420 U	410 U	420 3	. , , , , , 20 .UJv	440 U
bis(2-Chloroethyl)ether	400 1	. 390 U	- 420 5	410 U .	429 J	* 420 JJv	440 U
3-Chlorophenol	1 400 U	390 U	42 J	410 U	42 <u>0</u> U	* 420 UUV	440 U
1,3-Dichlorobenzene	400 J	390 0	420 U	410 0	420 U	* 420 UJV	440 U
1,4-Dichlorchenzene	400 U	390 T	ىت 29	410 ปี	420 J	* 420 UJV	440 U
1,2-Dichlorobenzene	1 400° Ü	390 U	420 U	410 U	420 J	* 420 GJv	440 U
2-Methylphenol	! 400 D	390 U	420 U	410 0	420 Ū	* 420 000	.440 U
2,2'-Oxybis(1-chloropropane)		390 U	420 U	410 U	÷20 ਹ	#20 UJV	440 U
4-Methylphenol	400 U	390 σ	420 U	410 U	420 U	* 420 UJv	440 U
N-Nitroso-di-n-propylamine	1 400 U	390 U	420 IJ	410 U	= 420 IJ	* 420 CCV	440 U
Hexachlorosthane	! 400 U	390 U	420 U	410 U	_420 U	* 420 UJv	440 U
Nitrobenzeze	400 U	390 Ü	420 U	410 U	420 U	· -	440 U
.74 C.1. Carlinations]	330 0	420 0	410 0:	_ 140 0	. 120 000	_1100
Isophorone	400 U	390 U	420 U	410 5	- 420 Ŭ	* 420 UJv	440 U
2-Nicrophenol	400 U	390 U	420 U	410 U		* \$20 UUV	440 U
2,4-Dimethylphenol	400 J	390 U	420 J	410 Ų	420 U	* 420 UJv	440 U
h.u(2-Chloroethoxy)méthane	40C J	390 J	- 420 IJ	413 U	420 J	* 420 JJV	440 U
2,4-Dichlorophenol	400 J	390 U.,	420 J	410 J	420 3	* 420 UJv	440 U
1.2.4-Trichlorobenzene	400 3	390 U	27 J	410 U	420 U	120 UJV	440 U
]						
Naphchalene	400, U	390 T	420 U	410 U	423 U		_440 Ü
4-Chlorcaniline	400 U		420 J	410 J	420 U	* 420 UJ#	440 U 440 U
Hexachlorobutadiene	400 U	390 U	. 420 J	410 U	420 U	* 420 UJV	440 0
4-Chloro-3-methylphenol	400 U		34. <i>J</i>	410 U	420 U	• _ 420 ಬ್	440 U
2-Methylnaphthalene	400 U	. 390 T	420 U	60 J	420 U	* 420 EUV	440 U
Hexachlorocyclopencadiene	400 U	390 U	420 U	410 U	. 420 U	* 420 ÜJV	440 U
2,4,6-Trichlorophenol	400 U	390 U	420 T	410 J	. 420 U	* 420 UJv	440 U
2.4.5-Trichlorophenol	1000 ד	99Q. T	- 1000 U	7000 A	rioo u	*. 1100 UJV	LIGO U
2-Chloronaphthalene	400 U	390 U	420 U	410, U	420 U	* 420 WV	440 U
2-Nitroaniline	1000 5	990 U	1000 U	1000 ਹ	1130 U	* 1100 UJV	1200 U
Dimethylphchalate	400 U	390 U	420 U	410 J	420 U	* 420 ULV	440 U
Acenaphthylene	400 U	390 ਦ	420 U	410. J	- 420 U	* 420 UUV	440 U
2.6-Dinitrotoluene	400 U	390 Ü	. 420 U	410 U	420 ፲	* 420 CCV	-440 U
3-Nitroaniline	1000 U	390 U	1900 U	1000 U		* 1100 CJV	1100 U
Acenaphthene	1 400 0	390 U	- 32 J	22 3	420 U		440 U
rivinia annoise	100 0	331 0	- 35				4
2,4-Dinitrophenol	1000 U	9 90 U	_1000 U	1000 U		* 1100 UV	1100 U
4-Nitrophenol	1000 U	990 U	1000 U	_1000 T	1200	* 7100 024	1100 U
Dibenzofuran	400 U	390 U	420 U	410 U	420 U	* 420 CJv	440 U
2.4-Dinitrotoluene	400 U	390 T	_ 420 U	410 T	420 J	* 420 CUV	440 U
Diethylphthalate	400 U	390 U .	420 U	410 U	420 U	* 420 UJV	-440 U
4-Chlorophenyl-phenylether	400 Ű	390 U	420 U	410 U	420 U	* 420 UJv	440 U
Fluorene	 400 U	390 U	420 U	410 U	42C U	* +20 UJV	440 U
4-Nitroaniline	1000 U	990 U	1200 U	1000 J	1100 U		1100 U
4,6-Dinitro-2-methylphenol	1000 0	990 U	1000 U	1000 U	1100 U		1100 U
				,			140 77
N-Nitrosodiphenylamine 4-Bromophenyl-phenylether	400 U 400 U	390 U 390 U	420 U 420 U	410 U 410 U	420 U 420 U		440 U
Hexachlorobenzene	400 U	390 T	420 U	410 U	420 U		440 U
And the state of t	i -35 5		-34	,	0		
Pentachlorophenol	1000 U	990 0	1000 U	1000 0	1100 U		1100 U
Phenanchrene	400 U	_ 390 U	420 U	220 3		* 420 CUV	440 U 440 U
Anchracene	400 U	390 U	420 U	410 U	420 U	* 420 UJV	. 440 U _

CRGANIC DATA SUMMARY

Case No.: 25159

SDG:

FFG02

Reviewef: M. Missler

Laboratory: AATS

Matrix: SOIL

. Units:

ug/Kg

SEMIVOLATILES	FLAG		FLAG_	FLAG	FLAG	flagflag	
EPA SAMPLE NUMBER:	FF-G02	₹ F -303	FF-G04	FF-G05 _ FF-	306 FF-GOGRU	FF-G07	
Carbazole	400 ਹ	390 5	420 C	410 U	120 J + 42) UJV 440 U	
Di-m-bucylphthalate	400 U	390 🎞	_ 420 U.	410 0	£20 <u>0</u> * 420	। ਹ ੁ ਹ	
Fluoranthene	400 U	390 ℃	420 C	130 ਹੁ	120 U T. 12	UJv _ 440 U	-
Pyrene [400 U	390 J	420 C .	180 J	<u> 20 U + 42</u> 0	UJv 440 U	
Bucylbenzylphthalate	35_ J	36 J	ت 34	57 J	20 T + 420	। ਇਹ∀਼_45 ਹੁੰ	
3,3'-Dichlorobenzidine	400 U	390 C	420 U	410 U	20 T + 420	। ਹੁਹੁਂ⊽ ਼ 440 ਹੋ	
Benzo (a) anthracene	400 U	390 ʊ	420 U	W-18-1		। ਇਹ ਂ 440 ਼ਹ	_
Chrysene	400 U	390 U	420 U	150 J	20 U * 420	1050 440 ਹੈ :	
bis(2-Ethylhexyl)phthaiace	400 U	390 ប	420 J	410 전	±20 ਹ * _ 426	100v 440 U	
Di-n-octylphthalate	400 U _	390 U	-			υσγ , 440 Ψ ,	
Benzo (b) fluoranthene	400 U	390 ữ	420 U	90 J	20 U * 420	0Jv 440 Ū	
Benzo (k) fluoranthene	400 U	390 &	420 U	84 ű - é	.20 U .* 420	UUV 440 Ū	
Benzo (a) pyrene	400 C	390 U	. 420 C	100 J		CJV .440 U	
Indeno(1,2,3-cd)pyrene	400 U	390 🌣	320 ℃		-	U3v_ 440 U	
Dibenz (a,h) anthracene	400 U	390 U	42Q 🖺 _	410 U 4	20 U * 420	ੁਧਰਾ ਂ 440 0	-
Benzo(g,h,:!perylene	400 U	390 I	420 ਹ	410 U 4	20 <u>U</u> • 420	UJv 440 U	-
Sample wt (g):	30	₃₀	. 30	30	30 30	30	•
*Moiscure: j	18	16	21	1.9	22 22	_ 11, 25	
Dilucion Factor:	1	. 1	1 .	I	1 . 1	1	
Level:	LOW	LGW	LOW	ľom i	ow low	TOM	_
Number of TIC's:	20	9	9	22	20 . 35	33 _	

For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results. Note:

SDG:

FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

SEMIVOLATILES	FLAG		FLAG	<i>.</i>	_FLAC	FLAG	FLAC	FLAG_	FLAG
EPA SAMPLE NUMBER:	 FF-G08	FF-G09	71	F-GO9RE		FF-GIC	FF-G11	FF-G12	FF-G13
Phenol	430 T	460	ប +	460	J	400 U	410 U	410 U	380 J
bis(2-Chlorcethyl)ether	430 J	460		460	Ū	400 U	410 U	410 U	380 J
2-Chlorophenol	430 J	460	ប 🕶	460	U	400 U	410 A	410 U	380 U
1,3-Dichlorobenzene	430 U	+60	ប *	460	U	400 U	410 U	410 U	380 U
1,4-Dichlorobenzene	430 T	460		460	U	400 U	410 U	410 U	380 U
1,2-Dichlorobenzene	430 U	460	ប •	460	U	400 U	410 U	410 U	380 U
2-Methylphenol	430 U		σ •	460	_	400 U	410 T	410 U	380 U
2,2'-Oxybis(1-chloropropane)		460		460		400 0	410 U	410 U	380 U
4-Methylphenol	430 U	460	U *	460	U	4G0 U	410 7	410 U	38Q U
N-Nitroso-di-n-propylamine	430 U	460		460	_	400 U	410 0	410 U	380 U
Hexachloroethane	43. 0	460	-	460	_	400 U	410 0	410 U	380 U
Nitrobenzene	430 U	460	y +	460	Ü	400 U	410 U	410 U	380 U
Iscphorone	430 U	460		460		400 U	410 J	÷10 ប	380 ೮
2-Nitrophenol	430 U	460		460	_	400 U	410 3	410 U	T 08E
2.4-Dimeshylphenol	430 ਹ	460	J *	460	Ū	400 U	410 J	410 U	380 Ü
pis(2-Chloroethoxy)methane	430 U	460 1	J +	460	U	400 U	410 U	410 U	380 U
2.4-Dichlorophenol	430 U	460 3		460	-	400 U	410 J	410 U	380 U
1,2,4-Tricklorobenzene	430 U	460 (J *	460	บั	400 U	410 J	410 U	Z 08E
Naphthalene	430 U	460 3	J +	460	J	400 U	410 U	410 U	380 U
4-Chloroaniline	430 U	460 (J •	460	U	400 U	410 T	410 U	380 U
Hexachlorobucadiene	430 U	460 3	J *	460	U	400 U	. 410 T	410 U	380 U
4-Chloro-3-methylphenol	430 U	460 (J *	460	U	400 U	410 U	410 U	3 80 U
2-Merhylmaphrhalene	430 U	460	J -	460	U	400 T	410 U	410 U	380 T
Hexachlorocyclopentadiene	430 U	460 (J	460	ס →	400 U	410 U	410 U	380 Ü
2,4,6-Trichlorophenol	430 U	460	J	460	U +	400 U	410 U	410 U	380 U
2,4,5-Trichlorophenol	1100 T	1200 (J	1200	ប -	7000 A	1000 T	1000 U	960 ਹ
2-Chloronaphchalene	430 U	460 T	1	460	บ *	400 U	410 U	410 U	_ 380 T
2-Nitroaniline	1200 T	1200 (7	1200	U -	1000 A	1000 1	1000 U	960 ਹ
Dimetnylphchalace ;	430 T	460 %	J	+60	υ •	400 J	410 U	410 T	380 J
Acenaphthylene	430 T	460 1	3	460	υ •	400 A	410 J	410 U	380 U
2.6-Dinizrotoluene	430 U	460 1		460			410 1	410 U	380 U
3-Nitroaniline	1100 0	1200		1200	_		1000 U	1000 0	960 U
Acenaphthene	430 U	460	J	460	u -	400 T	410 U	410 U	380 U
2.4-Dimitrophenol	1100 U	1200	J	1200	ט +	1000 U	1000 T	1000 T	960 U
4-Nitrophenol	1100 U	1200	a	1200		2000	1000 U	1000 U	960 T
Dibenzoîuran	430 U	460	Œ	460	U *	460 U	410 U	410 U	T 08E
2.4-Dinitrotoluene	430 U	460			u •		410 U	410 U	U 08E
Diethylphchalate , [430 T	460			ס *		410 U	410 U	380 17
4-Chlorophenyl-phenylether [430 U	460	σ	460	U *	400 U	410 U	410 U	380 7
Fluorene	430 U	460			v *		410 A	410 U	380 0
4-Nitroan:line	1100 U	1200		1200			1000 0	1000 U	960 U
4,6-Dinitro-2-methylphenol	1100 U	1200	U	1200	υ •	1000 U	10 00 T	1000 U	960 0
N-Nitrosodiphenylamine	430 U	460			υ •		410 U	410 U	380 9
4-Bromophenyl-phenylether	430 T	460			σ •		410 T	410 U	380 0
Hexachlorobenzene	430 U	460	U	460	υ.	400 U	410 U	410 U	380 U
Pentachlorophenol (1100 U	1200	U	1200	σ •	1000 U	1000 U	1000 U	960 U
Phenanchrene	210 J	460			α .		410 U	34 J	380 Ü
Anthracene	430 U	460	U	460	α.	400 U	410 U	410 U	380 0

ORGANIC DATA SUMMARY

Case No.: 25153

SDG:

Note:

FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Jaics:

- ug/Kg

SEMIVOLATILES	FLAG	FL	AGFLAG_	FLAG	FLAG FLAG	FLAG
				55-0		55-03
epa sample number:	FF-G08	FF-G09	FF-G09RE	FF-G10 FE-G11	FF-G12	FF-G13
Carbazole	46 J	460 U	460 U ◆	400 U .410	. U 410 U	∕ .380 Ū
Di-n-butylphthalate	+30 Ư	460 U	- 460 U •	400 U 410	- ,	.380 U
Fluoranchene	240 J	460 U	. 460 U =	400 U 410	U 68. J	√ ,380 Ū
i					//	<i>/</i> * .
Pyrene	170 J	49 J	+3 •	400 U 410	•	/ ,380 U
Bucylbenzylphchalace	48 J	29 J	32 🕶		J 21 J	380 U
3,3'-Dichlorobenzidine	430 Ü	460 U	460 U *	400 U . 410	_U 410 U	380 Ū
Senzo (a) anchracene	430 U	460 U	. 460 U *	400 U 410	υ 36 Ј 🗸	, , 380 U
Chrysene	96 J	49 J	44 +	400 U 410	1/	380 U
bis(2-Ethylhexvl)phthalace	430 U_	_ 460 U	460 U	400 U410		380 Ū
						- •-
Di-n-octylphthalate	430 U	460 UJv	v 460 Ū *	. 400 U 410.	T 410 T	, .380 T
Benzo (b) fluoranthene	430 U	31 J	29 •	400 U 410	U 42 J	380 ℧
Benzo (k) fluoranthene	430 U	31 J	29 *	400 Ŭ 410	Ū 51 J ✓	390 U
3 (-)	430 U	27 J	24 🔻	400 U 410	U 36 JV	.380 U
Benzo (a) pyrene	430 U	460 UJv		400 U 410	•	380 U
Indeno(1,2,3-cd)pyrene ! Dibenz(a,h)anthracene !	430 U	460 UJV		400 U 410		380 U
Jinenz (a, n) anthracene :	430 3	. 460 CCA	7 480 U -	400 O 4TO	9 470 0	
Benzo(g,h,i)perylene	£ 025	460 UJv	r . 460 ℧ *	490 U 410	U 410 U	_ ;380 U
; l						
Sample wc (q):	30 -	30 .	30	30' ;30	30	30
	-	-				
%Moiscure:	23	** 29	29 -	- ₁₈ · 19	20	. 14
Dilution Factor:	1	1	1	1 1	2	_ 1
	_	_				
Level:	LCW	LOW	LCW	LOW LCW	LCW	FOM
Number of TIC's: [35	. 33	28	21 : 35	26	35
Í						

For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

SEG:

FFG02

.eviewer: M. Missler

Laboracory: AATS

Matrix: SOIL

Units:

nā/Kā

SEMIVOLATILES	F		_FLAC	3 <u></u>	FL	.G_		FLAG_	_	_FLi	AG_		_FL	AG		FLA	iG
epa sample number: !	FF-G14	FF-G15		FF-G15RE			FF-Gl6	Ē	F-G16RE			FF-G17		FF	-G17RE		
Phenol !	400 3	380	u	380	3		430 (IJ	430	U	-	400	3	•	400	ซ	
bis (2-Chloroethyl) ether	400 7		_	380		*	430	J	430	IJ	•	400	U	*	400	U	
2-Chlorophenol	400 0		-			٠	430 T	-	430		-	400		•	400		
*-0-:10:056::01	400 0	360	•	360	٠		430 (•	130	•			-		,	•	
1,3-Dichlorobenzene	400 3	380	ū	380	IJ	٠	430 0	IJ	430	IJ	•	+00	J	•	400	U	
1,4-Dichlorobensene	400 J	380	U	380	U	*	430 0	J	430	IJ	-	400	J	•	400	U	
1,2-Dichlorobenzene	400 U	380	IJ	380	IJ	•	430 C	IJ	430	IJ	•	400	IJ	•	400	U	
2-Methylphenol	400 U	380	П	380	C	*	61	J	57		*	400	U		400	ם	
2,2'-Oxybis(1-chloropropane)	400 U			380		•	430 0		430	U	*	400		-	400	U	
4-Methylphenol	400 U			380		•	94		100		•	400		•	400	U	
1			_		_			-									
N-Nitroso-di-n-propylamine	40Q U	380	3	380	IJ	*	430 5	J	430		*	400	Ū	•	400		
Hexachlorcethane	400 U	380	IJ	. 380	U	•	430 0	ב	430	α	*	400	Ü	•	400	Ū	
Nitrobenzene	400 C	380	U	380	IJ	*	430 0	Ţ	430	IJ	*	+90	U	•	400	U	
Isophorone	400 ℃	380		380	77		430 0	т .	430	:T		÷00		•	400	π	
2-Nicrophenol	400 U			380		•	430 3		430		٠	400		*	400		
2.4-Dimethylphenol	· 400 U	380		380			350		380	•		400		-	400		
a, 4-bimetary -phonois	100 5	300	-	200	•		,,,,	•					•			_	
Els(2-Chloroethoxy)methane	400 2	380	J	380	ij	•	430 0	J J	430	3	•	+00	IJ	•	400	J	
2.4-Dichlerophenol !	400 T	380	Ū.	380	U	*	430 t	3	430	IJ	*	+00	3	•	4G0	Œ	
1,2,4-Trichlorobensene	-00 3	380	IJ	380	IJ	•	430 C	U	430	IJ	•	400	J	•	400	U	
Naphthalene	400 C	81	-	380		•	430 C		430		•	400		*	400		
4-Chloroaniline	400 2		_	380		•	÷30 (-	430		*	400		•	400		
Rexachloroputadiene	400 U	380	ប	380	IJ	•	430 T	J	430	บ	*	400	u	•	400	ū	
4-Chloro-1-methylphenol	400 J	380	IJ	380	U		430 T	IJ	430	σ	*	400	IJ	*	400	σ	
2-Methylmaphthalene	400 U		-	180		•	430 0		430		*	400	IJ	•	400	U	
Hexachlerscyclopentadiene	400 U			380	U	٠	430 C		430	Ū	•	400	σ		400	IJ	*
1																	
2,4,6-Trichlorophenol	400 U	380	บั	380	U	•	430 C	Ţ	430	J	*	+00			400		*
2,4,5-Trichlorophenol	1000 A	950	U	350	IJ	*	1100 (IJ	1100		*	1000			1000		*
2-Chloronaphthalene	400 C	380	บ	380	U	•	430 (IJ	430	IJ	•	400	3		400	Ū	*
2-Nitroaniline	1000 ಕ	950	:1	950	:1	•	1100 1	3	1100	ฮ		1000	-7		1000	U	*
Dimethylphchalace	400 U			330		*	430 (430		٠	400			400	U	•
Acenaphriyiene	400 3			380	_	•	430 1		430		*	400			400	Ū	•
, ——, ——, ——			_		-												
2,6-Dinitrotoluene	400 U	380	IJ	380	Ū	*	430 (Ū	430		•	400			400		*
3-Nitroan:line	1000 U	950	U	950	U	•	1100 t	U	1100		•	1000			1000		*
Acenaphthene	400 U	380	a	380	U	*	430 t	U	430	U	*	400	IJ		400	U	*
2.4-Dinitrophenol	1000 5	950	TT	950	**		1190 (77	1100	π		1000	п		1000	U	
4-Nitrophenol	1000 U			950	-		1100		1100	_		1000			1900		•
Dibenzofuran	400 U			380		•	430 1		430		-	400			400	τ	*
DIDEILOT III III	100 0	555	-	224	-		-	-									
2,4-Dinizrotoluene	400 J	380	Ū	380	U	•	430 (U	430	ŭ	•	400	IJ		400		
Diethylphikalate	400 U	380	Ū	380	U	*	430	J	430	ŭ	*	400	J		400		
4-Chlorophenyl-phenylether	400 A	380	a	380	a	*	430 (σ	430	ū	٠	+00	Ū		400	a	•
27	100 5	. 300	TT	380			430 (п	430	rt		400	: T		400	σ	*
Fluorene	400 T								1100			200			1000		
4-Nitroangline	1000 U		_	950 950			1100 (1100			2000			1000		
4,6-Dinitro-2-methylphenol ;	1000 [330	UJν	330	J	-		JU 4	1100	•		2000	-			-	
N-Nitroscoiphenylamine	400 U	380	UJv				430	IJν	430			400				U	
4-Sromopnenyl-phenylether	400 U		$\Omega \Omega v$				430		430			400				0	
Hexachloropenzene	400 U	380	IJν	380	Ū	•	430	Ωv	430	U	•	400	ប		400	ŭ	*
Pentachlorophenol	1000 1	950	υJν	950	υ		1100	UJv	1100	U	*	1000	σ		1000	U	
Phenanthrene	400 0		J.	820	-	*	430		430			400			400	ט ו	•
Anthracese	400 0		IJν		U	•	430		430						400	ŭ	•

CRGANIC DATA SUMMARY

Case No.: 25159

__ SDG:

Note:

FFG02

Révlewer: M. Missier

Laboratory: AATS

Matrix:

SOIL

Jnics:

.ug/Kg

semivolateles	ļ	TAG	FLAC	3	FLAG		_FLA	<u> </u>	FLAG		_FLAG	<u>-</u> ,-	FLAC	3 _.
EPA SAMPLE NUMBER:	 FF-G14	FF-G1?		FF-G15RE		££-Gīģ		EE-GT64E	-	. FT-G17		FF-GI7RE		
Carbazole	! 400 t	i 38 <u>0</u>	ωv	380 (J +	430	UJv	430	U •	400	σ	400		
Di-n-butylphthalate	400 0	380	CJv	57	•	430	ÜJv		•	400	Ū	400	u .	-
Fluoranthene	400 t	ī 380	IJv	110	•	430	024	430	ਹ *	400	ū	400	י ט	*
?yrene	400 0		_	590	. •.		UJv	430				400	u .	
Bucylbenzylphthalate	400 🗓		IJν¯	380 (100	_	430			_	, 56		•
3,3'-Dichlorobenzidire	400 t	1 380	ΩŢΨ	7 085	J •	430	UUV	_ 430	U <u>*</u>	400	UJV	400	α .	
Benzo (a) anthracene	400 U		5	280				430	U *		UJv	400	υ •	-
Chrysene	400 U	590	J	670	•		೮೮೪	110			J	40		-
bis(2-Ethylhexyl)phthalate	400 U	380	IJν	380 7	1 *	430	IJv	430	u -	400	ĊĴΨ	. 62	•	-
Di-n-octylphthalate	400 U		IJν	380 7	Į. •	27		430			W		u _	
Benzo (b) fluoranthene	400 0			210	•		$\Omega \Omega \Delta$	430			ಬ್	-400		-
Benzo (k) fluoranthene	400 U	380	IJν	58	- •	430	UJV	430	U *	400	03v	_400	υ •	-
Benzo (a) pyrene	400 D		_	240	•		٠ تد	_160	•		다고~	-	σ .	
Indeno(1,2,3-cd)pyrene	400 ប		ಝ∨	380 7)Lv				103 v		U -	
Dibenz(a,h)anthracene	400 G	380	CUV.	380 7	1	- 430	IJν	430	* ט	400	ucv.	400	σ •	
Benzo(g,h,i)perylens	400 ਹ	440	j	380 (, ÷	130	UJv	-430	σ •	4 .0	ÜÜV	400	Ū•	
Sample wt (g):	30	. 30		30		. 30	٠.	30	-	. 30		, 30		
%Moisture:	18	13	-	13		24	-	24		18		18		
Dilution Factor:	·	1		1		1		_ 1_	-	1	-	. 1		
Level:	LCW	LOW		LOW		LOW		TOM		LOW		TOM		
Number of TIC's:	22	35		35		35	-	· · · ː 35_	-	29		. 22	-	-

For the results listed in the Data Summary Table. ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

SEG:

FFG02

devlewer:

M. Missler

Laboratory: AATS

Macrix:

SOIL.

Units:

ug/Kg

semivolatiles	ļ	_FLAC	3 <u></u>	_FL	AG_		_FL	iG_		_FLA	s	_FLAG		_FLAG	<u> </u>	_FLAG
EPA SAMPLE MUMBER:	 FF-G18		FF-G18RE			FF-G21		5	F-GZ1RE		FF-G22		FF-G22RE		FF-G23	
Vehenol	i 400	. ·	400	U		400	U		400	Ľ	400	U	400	บ -	400	U
/bis(2-Chloroethyl)ether	100					400		•	400		400		400		400	
./C-Chlorophenol	460	ű,	400	U		400	U	•	400	ប	400	U	400	u -	400	σ
✓ 1,3-Dichlorssenzene	[. 400	. r	400			400	TT		400	rT.	400	ΙŦ	400	17 *	400	r r
/ 1,4-Dichlorocencene	1 400					400			400		400		400		400	
/ 1.2-Dichlorosenzene		j.				400			400		400			υ •		
we washed and a	!		400					_			100		400			
ν 2-Methylphenol 5 2.2'-Cxypis(1-chloropropane)	; 400 ; 400			-		400 400		•	400 400		400 400		400 400		400 400	_
/ 4-Mechylphenol	400		100			400			400		400			• ט		
/N-Nitroso-di-n-propylamine	+00					400		•	400		400		400	-	400	
/Hexachloroethane	46.	U •				400		-	400	-	400		400			
Witrobenzene	400	υ •	400	U		400	U	•	400	υ	400	u	400	υ •	400	U
√Isophortne	÷00	y •	400	IJ		400	Ü	•	400	IJ	400	Ū	400	U *	400	U
,2-Microphenol	400	u •	400	IJ		400	U	•	400	U	400	ũ	+00	ਹ -	400	U
√1,1-Dimernylphenol	400	J .	400	U		400	Ţ	•	400	C	400	IJ	400	u +	400	ਹ
lois 2-Chlaroschowstwechami	400	. -	400	77		400	TT		406	••	400	гт	400		400	71
Vois (2-Chloroethoxy) methane Vo, 4-Dichlorophenol .	+00			_		400 400			400		400			σ *	400	
. 1,2,4-Trichlorobenzene	±00			_		100		*	400		400			υ •	400	
• /													•			
Maphthalene	400		400	_		400		•	400		400			U *	400	
-/4-Chloroaniline	400 ÷00					400	_	*	400		400 400	-	400 400		400 400	
/ Hexachlorocucadiene	-200	J -	400	u		400	u	•	400	U	400	u	400	u -	400	u
√4-Chloro-3-methylphenol	400	u •	400	ប		400	α	*	400	U	400	U	400	u -	400	U
Z-Methylnaphthalene	400	ʊ -	400	U		400	U	*	400	ซ	400	Ű	400	u •	400	U
Hexachlorocyclopentadiene	400	J	400	σ	•	400	U		400	υ .	400	J	400	ਹ •	400	ט
V2.4,6-Trichlorophenol	400	ı	400	U	•	400	U		400	บ •	400	σ	400	U +	400	ע ט
0 2.4,5-Trichlorophenol	1000		1000		•	1000			1000		2000		1000		1000	
2-Chloronaphthalene	400	IJ	400	U	~	400	ប		400	σ .	400	ū	400	ਰ *	400	ũ
12-Nitroaniline	1300	-7	1000			1000	77		1000	rt •	1000	IT	1000	υ -	1000	עט
Dimethylphthalate	400		400		*	400			400		400		400		400	_
Acenaphthylene	400		400		•	400			400				400		400	
																_
/1,6-Dinitrotoluene.	400 1000		400		•	400			400		1000		400 1000		400 1000	
V3-Nitroan:line Acenaphthene	400	_	1000 400			1000 400			1000 400			_		U *		
,		-	100	•		400	•		100	•	100	•		•		_
V2.4-Dinitrophenol	1000		1000		*	1000			1900	_	2000		1000	_		עע
74-Nitrophenci	1000	_	1000	_	*	1000			1000				1000			<u>u</u>
Wibenzofuran	400	σ	400	0	٠	400	u		400	σ,	400	Ū	400	u •	400	U
V2,4-Dinitrotoluene	400	ប	400	Ü		400	ũ		400	ช •	400	U	400	u -	400	a
/ Diethylphthalate /	400		400			400			400	_				Ū =		σ
√4-Chloropnemyl-phenylether	400	U	400	U	•	400	ŭ		400			U	400	U *	400	ŭ
V#luorene	400		400	FÝ		400	.,		400	 .	400	řŦ.	400	υ *	400	π /
V A-Nicroaniline	✓ 1000	_	1000			1000			1000				1000			
14.6-Dinitro-2-methylphenol	1000		1000			1000			1000				1000			ער
		•														_
N-Nitrosodiphenylamine	400		400			400			400			UJV	400			
4-Bromophenyl-phenylecher	400 400		400 400			400 400			400 400			U√	400	U .		
Averagniorcenseus	*00	9	400	v	_	400	J		400	Ü	- 400	wv	400			/
√ Pentachlorophenol	1000	U	1000	U	*	1000	ប		1000	Ţ.	- 1000	UJv	1000	σ.		, SO
henanthrene	400		400			400			400			WV	400		. 15	יע פ
Anthracene	400	U	400	U	٠	400	U		400	U	400	ÜΪV	400	υ •	400	a
-																

SDG:

FFG02

Reviewer:

M. Missier

Laboratory: AATS

Matrix:

SOIL

Units:

ug/Kg

SEMIVOLATILES	ļ	_FLAG		_FL	AG_	<u></u> _	_FLAG		_FL;	%G_		_FLAC	3 _	_FLi	AG_	 -	_flag
EPA SAMPLE NUMBER:	 FF-G18		FF-G18RE			FF-G21	F	F-GZIRE			FF-G22		FF-G22RE			FF-G23	
/Carpazole	 400	Ū	400	J	-	400	Ū	400	U	•	400	Ujv	400	Ū	-	400	U
/Pi-m-butylphthalate	400	Ü	400	IJ	•	30	J 1/	27		•	400	UJV	400	U	*	400	U
/Fluoranthene	400	Ü	400	IJ	•	400		400	ប	۳	400	ŪĴΨ	400	U	•	400	a
/Pyrene	38	٠	400	U	•	25	ر من _ق			•	400		400	_	-	94	31/
Butylbenzylphthalace	45	J	51		*	35	ヷン	400		•	400		400	-	*	59	31/
,3,3'-Dichlorobensidine	400	ÜJv	400	ប	*	400	びびひょく	400	Œ	•	400	CJv	400	U	*	400	DJV Z
, Benzo (a) anthracene	400	UJv	400	σ	•	400	UJv V	400	U	٠	400	Ūσν	400	U	•		יין יידנו
Chrysene /	26	J	26		•	22	J ₺∕	400	U	٠	400	UJV	400	IJ	•	82	3/
bis(2-Ethylhexyl)phthalace	400	Шv	83		•	400	22.a ~	87		•	400	ŪJv	400	U	*	400	DJv V
Di-n-octylphthalace	400	03v	400	U	•	400	ωv√	400	σ	*	400	<u>U</u> v	400	Ū	•		DZA À
, Benzo (b) fluoranthene (400	UJv	400	U	*	400	JJv 🗸	400	U	*	400	ŪJν	400	U	*	31	JV,
Benzo (k) fluoranthene	400	UJv	400	U	*	400	Ωv √	400	ū	•	400	ŪJν	400	U	•	26	J.
/Benzo(a) pyrene:	400	CJv	400		•	400		400		٠		ijγ	400		-	54	3/
Jindeno (1,2,3-cd) pyrene	400	CJv	400	U	•	400	UJv	400	U	*		ijŢΨ	400	_	*	51	3
Dibenz (a,h) anchracene	400	ωv	408	IJ	•	400	02v	400	Ū	*	400	CJv	+00	U	•	26	JV
/Benzo(g,h,i)perylene /	400	W	400	ប	•	400	ŪJν	400	σ	•	400	Ūΰv	400	U	•	190	JV
Sample wc (g):	30		30			30		30			30		30			30	
%Moisture:	18		18			19		18			19		19			18	
Dilution Factor:	1		1			ī		1			1		1			1	
Level:	LOW		LOW			LOW		LOW			LOW		LOW			LOW	
Number of TIC's:	25		17			27		19			31		26			26	

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

SDG:

FFG02

keviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units:

ug/Kg

SEMIVOLATILES	[AG	Fiag	FLAG	FLAG	FLAG	flag	flag
EFA SAMPLE NUMBER:	 FF-G23RE							
Phenol	: 400 U	•						
bis (2-Chlorcethyl) ether	j +00 U							
2-Chlorophenol	400 U	•						
1,3-Dichlorobenzene	400 ਹ							_
1,4-Dicalorobenzene	£ 00 T							
1.2-Dichlorobenzene	¦ 400 ℧ !	•						
2-Methylphenol	400 U							
2.2'-Oxybis(1-chloropropane)								
4-Methylphenol	÷00 ℧	*						
N-Nitroso-di-n-propylamine	±00 ℧	•						
Hexachloroethane	400 U							
Nitrobenzene	÷30 ℧	•						
Isophorone	400 Ü							
2-Nitrophenol	400 U							
2,4-Dimethylphenol	400 II	•						
Jis (2-Chloroethoxy) methane	400 T							
2,4-Dichlorspnenol	460 J							
1,2,4-Trichlorocenzene	400 U	•						
Naphrhalene !	T 904	*						
4-Chloroaniline	400 U							
Hexachlorobuzadiene	C 00÷	•						
4-Chloro-3-methylphenol	÷00 Ū	•						
2-Merhylnaphthalene	400 U	•						
Hexachlorocyclopentadiene	400 T	•						
2,4,6-Trichlorophenol	÷00 U	*						
2,4,5-Trichlorophenol	1000 U	•						
2-Chloronaphthalene	400 J	*						
2-Nitroaniline	1000 ਹ	•						
Dimechylphthalate !	400 U	•						
Acenaphthylene	400 U	•						
2,6-Dinitrotoluene	400 U	•						
3-Nitroaniline	1300 U							
Acenaphthene	400 A	•						
2,4-Dinitrophenol	1300 T	•						
4-Nitrophenol	1000 T							
Dibenzofuran	400 T	•						
2,4-Dinitrotoluene	400 U							
Diethylphthalate	400 U							
4-Chlorophenyl-phenylecher	400 U	•						
Fluorene	400 U					-		
4-Nitroaniline	2000 0							
4,6-Dinitro-2-methylphenol	7000 Å	•						
N-Witrosodiphenylamıne	400 Ü	•						
4-Bromophenyl-phenylether	400 U							
Hexachlorobenzene	400 U	•						
Pentachlorophenol	1000 U							
Phenanthrene	35	•						
Anthracene	40¢ U	•						

ORGANIC DATA SUMMARY

Case No.: 25159

SEG:

FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix:

SOIL

Unics:

ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG	FLAG	flag	FLAG
EPA SAMPLE NUMBER:	 FF-G23RE						
Carbazole	 400 U *						
Di-π-butylphthalace	23 -						
Fluoranchene	23 *						
Pyrene	90 *						
Butylbenzylphthalace	81 *						
3,3'-Dichlorobenzidine	400 J *						
Benzo (a) anthracene	+ U 004						
Chrysene	77 *						
bis(2-Ethylhexyl)phthalace	[79 *						
Di-n-octylphthalate	400 U *						
Benzo(b) fluoranthene	35 *						
Benzo(k) fluoranthene	41 *						
Benzo (a) pyrene	60 -						
Indeno(1,2,3-cd)pyrene	29 +						
Dibenz(a,h)anthracene	1 400 U T						
Benzo(g,h,i)perylene	112 *						
Sample wc (g):] 						
₹Moisture:	i j. 18						
Dilution Factor:	1						
Level:	Low						
Number of TIC's:	1 35 						

Note:

For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

ORGANIC DATA SUMMARY

Case No.: 25159

SDG:

FFG02

Reviewer: M. Missler

Laboratory: AATS

Macrix:

SOIL

Units:

ug/Kg

PESTICIDES/PC3s	FI	,AG	FLAG		_FLAG_		FLAG	- Beating	_FLAG_		_FT_AG_		_FLAC
EPA SAMPLE NUMBER: !	FF-G02	FF-G03		FF-G04		FF-G05		FF-G06		FF-G07		FF-GO8	
alcha-2HC	2.1 3	2.0	σ	2.2	IJ	2.1	IJ	2.2	U	2.3	u	2.2	IJ
bera-BHC	2.1 J	2.0	U	2.2	IJ	2.1	IJ	2.2	a	2.3	J	2.2	U
delta-BMC	2.1 U	2.0	บ	2.2	ซ	2.1	ນ	2.2	IJ	2.3	Ü	2.2	U
gamma-BHC (lindage)	2.1 U	2.0		2.2	375 24	2.1		2.2		2.3	1	2,2	
Reptachlor	2.1 J	2.0	IJ	2.2		2.1		2.2	(1) Th.	2,3	10000	2.2	
Aldrin]	2.1 U	2.0	U	2.2	U	2.1	U	2.2	U	2.3	IJ	2.2	3
Heptachlor epoxide	2.1 U	2.0		2.2		2.1		2.2		2.5	0.550	2.2	
Endosulfan I	2.1 5	2.0		2.2		2.1		2.2		2.3	220	4.3	
Dieldrin	1.0 U	3.9	a	4.2	O .	4.1	U	. 4.2	U	4.4	U:	4.3	U
4,4'-DDE	4.0 ប	3.9		4.2		4.1	100	4.2	10000	4.4		4.3	
Endrin	4.0 3	3.9		4.2		4.1		4.2	50	4.4		4.3	
Endosulfan II	4.0 U	3.9	U	4.2	5	4.1	U	4.2	U	4.4	IJ	4.3	U
4.4'-DDD	4.0 3	3.9	Œ	4.2		4.1		4.2	7.	4.4		4.3	
Endosulfan sulface	4.0 U	3.9	24700	4.2		4.1	- 557 667	4.2	100	4.4	0.50	4.3	
4,4'-DDT	4.0 J	3.9	U	4.2	O	4.1	J	4.2	J	4.4	J	4.3	u
Methoxychler i	21 3	20	97.0	22		21	VIS	22		23	1.77		ū
Endrin ketone	4.0 J	3.9	U	4.2		4.1	(32.50)	4.2	V-0133	4.4		4.3	
Endrin aldehyde	4.0 U	3.9	U	4.2	ប	4.1	J	4.2	U	4.4	J	4.3	u
alpha-Chlordane	2.1 U	2.0	J	2.2		2.1	1516	2.2		2.3		2.2	
gamma-Chlordane	2.1 T	2.0	200	2.2		2.1		2.2		2.3		2.2	
Toxaphene	310 A	200	U	220	U	210	U	220	G	230	J	220	u
Aroclor-1016	40 U	39	σ	42		41	-	42	- 10 m	44	50 mm	A 1990 11	. U
Aroclor-1221	82 U	80	σ	85	765000	83	1200	86		99	3.30		a
Aroslor-1232	40 J	39	U	42	U	41	U	42	U	44	U	43	Ū
Aroclor-1242	40 U	39	U	42	150	0.000	0.000	42		100	ı	171-01	U
Aroclor-1248	40 U	39	U	42		41	100000	42	555	3527	O.	177	U
Aroclor-1254	40 J	39	U	42	σ	41	J	42	П	44	ū	43	Ū
Aroclor-1260	40 U	39	Ü	42	ם	41	J	42	ฮ	44	U	43	ı u
Sample wc (g):	30	30		30		30		30		30		30)
*Moiscure:	18	16		21		19		22		25		23	3
Dilution Factor:	1	1		1		1		1		1	Ú.	93	L

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

SDG:

FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units:

ug/Kg

				FLAG	FLAG	FLAG	FLAG
PESTICICES/PCBs	FLAG_		FLAG_		240_		
EPA SAMPLE NUMBER:	FF-G09	FF-G10	FF-G11	FF-G12	FF-G13	FF-G14	FF-G15
!	2,4 5	2.I U	2.1 U	2.1 U	2.0 T	2.1 U	2_0 U
alcha-BHC	2.4 U	2.1 U	2.1 J	2.1 T	2.0 U	2.1 U	2.0 0
beca-BHC	2.4 U	2.1 U	2.1 U	2.1 J	2.0 U	2.1 U	2.0 U
delta-BHC	2.4 0	2.1 0					
1	2.4 U	2.1 ប	2.1 U	2.1 U	2.0 U	2.1 ป	2.0 0
gamma-BHC (lindame)	2.4 Ü	2.1 J	2.1 U	2.1 J	2.0 U	2.5	2.0 U 2.0 U
Heptachlor	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 U	2.0 0
Aldrin	2.4 0						2.0 U
Heptachlor epoxide	2.4 U	2.1 0	2.1 Ū	2.1 U	2.0 U	2.1 0	2.0 U
Endosulfan I	2.4 U	2.1 U	2.1 U	2.1 U	2.0 0	2.1 U 4.0 U	3.8 U
Dieldrin	4.6 U	4.0 U	4.1 Ü	4.1 U	3.8 U	4.0 0	3.0 0
oletoran i						4.0 T	3.8 T
4.4'-DDE	4.6 ਹੋ	4.0 U	4.1 0	4.1 U	3.8 U	4.0 U	7.5 J
Endrin	4.ố Ű	4.0 U	4.1 J	4.1 U	3.8 U	4.0 U	7.9
Erdosulfan II	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 0	112
Elicosurrai					3.8 U	4.0 U	3.8 U
4.44-000	4.6 ਹ	4.0 U	4.1 U	4.1 U	3.8 U U B.E	4-0 U	10 W
Endosulian sulface	4.6 U	4.0 U	4.1 U	4.1 0	3.8 U	4.0 U	3.3 U
4.4'-DDT	4.6 ਹੋ	4.0 U	4.1 U	4.1 Ū	3.8 0	4.0 0	•
1,1					20 U	21 U	20 U
Methoxychlor	24 U	21 Ü	21 U	21 U	3.8 U	4.0 T	14 J
Endrin ketone	4.6 J	4.0 U	4.1 U	4.1 J	3.8 U	4.0 Ü	3.8 U
Endrin aldehyde	4.6 U	4.0 U	4.1 U	4.7 Ü	3.4 0	110	
				2.1 U	2.0 U	2.1 U	3.6 J
alcha-Chlordane	2.4 U	2.1 U	2.1 0	2.1 0	2.0 U	2.1 0	5.7
gamma-Chlordane	2.4 U	2.1 U	2.1 U	210 0	200 U	210 0	200 T
Toxappene	240 U	210 U	210 U	2	200 0		
•	ĺ		41 U	41 U	38 U	40 U	38 U
Arcclor-1016	46 U	40 U 82 U	83 U	84 U	78 U	82 U	77 U
Aroclor-1221	94 U	40 U	41 U	41 U	38 T	40 U	38 U
Arocior-1232	46 U	40 0	41 0				
	[] 46 ℃	40 U	41. U	41 Ū	38 U	40 U	38 U
Aroclor-1242	46 U	40 U	41 U	41 U	38 U	40 U	78 T
Aroclor-1248	1 46 U	40 U	41 U	41 U	38 U	40 U	38 U
Aroclor-1254	1 400						U 8E
Aroclor-1260	46 U	40 U	41 U	41 U	38 U	40. U	38 0
- 	I						
	1	30	30	30	30	30	30
Sample wt (g):	30	30	20	_			- -
	[] 29	18	19	20	14	18	13
*Moisture:	1 23	10				_	-
Dilution Factor:	1	1	1	1	1	1.	1
Dilucion Factor.	-						

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

SDG:

FFG02

.eviewer:

M. Missler

Laboratory: AATS

Matrix:

SOIL

Jnits:

ug/Kg

PESTICIDES/PCBs	FLAC	FLAC	FLAG	FLAC	gFLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G16	FF-G17	FF-G18	FF-G21	FF-G22	FF-G23	
aloha-∋HC (2.2 ប៊	2.1 U	2.1 U	2.1 U	2.1 Մ	2.1 0	
beca-BHC	2.2 ปี	2.1 U	2.1 U	2.1 U	2,1 U	2.1 U	
delta-BHC	2.2 U	2.1 5	2.1 U	2.1 ប	2.1 0	2.1 ਚ	
gamma-BHC (lindane)	2,2 ប	2.1 0	2.1 U	2.1 J	2.1 ប	2.1 U	
Heptachior	2.2 ʊ	2.1 ប	2.1 U	2.1 J	2.1 U	2.1 σ	
Aldrin	2.2 T	2.1 ប	2.1 0	′ 2.1 Ū	2.1 0	2.1 0	
Heptachlor epoxide	2.2 U	2.1	(2.9)	2.1 U	2.1 U	2.1 σ	
Endosulfan I	2.2 U	2.1 U	2.1 0	2.1 IJ	2.1 U	2.1 0	
Dieldrin	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	
4.4'-DDE !	4.3 ប	÷.0 ℧	4.0 U	4.0 🗓	4.0 ਹ	4.0 U	
Endrin	4.3 T	4.0 U	4.0 U	4.0 J	4.0 U	4.0 U	
Endosulfan II	4.3 U	4.0 U	4.0 U	4.0 U	4.0 T	4.0 U	
4.4'-900	4.3 U	4.9 U	4.0 U	4.0 U	4.0 U	4.0 U	
Endosulfan sulface	4.3 J	4.0 U	4.0 U	4.0 U	4.0 U	5.6 W	
4.4'-DDT j	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 3	
.echoxychlor	22 IJ	21 U	21 U	21 9	21 J	21 Y	
Endrin ketone	4.3 U	4.0 T	4.0 U	4.0 J	4.0 ♂	4.3 5	
Endrin aldehyde	4.3 U	4.0 U	4.0 U	4.0 J	4.0 U	4.0 U	
aipha-Chlordane	2.2 U	2.2 J	3.6 J	2.1 J	2.1 ป	2.1 J	
gamma-Chlordane	2.2 U	2.3 03	5.9 B	2.1 J	2.1 U	2.1 U	
Toxaphene i	220 U	210 J	210 0	210 3	310 A	210 3	
Aroclor-1016	43 U	40 U	40 U	40 U	40 U	40 U	
Aroclor-1221	88 0	82 U	82 U	82 U	82 U	82 U	
Aroclor-1232	43 U	40 U	40 U	40 U	40 U	40 U	
Aroclor-1242	43 U	40 T	_ 40 U	40 U	40 ਹ	40 ਹ	
Aroclor-1248	43 U	40 U	40 U	40 U	40 U	40 U	
Aroclor-1254	43 U	40 U	40 U	40 U	40 J	40 U	
Arcclor-1260	43 Ü	40 U	40 Ü	40 U	40 ਹ	40 J	
Sample wt (g):	30	30	30	30	30	30	
%Moisture:	24	18	18	18	18	18	
Dilution Factor:	ı	1	1	1	1	1	

Note: For the results listed in the Data Summary Table. ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

INORGANIC/ORGANIC COMPLETE SDG FILE (CSF) IN . ENTORY CHECKLIST

Case No.	25159 SDG No. FFG02 SDG Nos. To Foll	ow SAS No.	Date i	Rec _1	2/27/96
EPA La	b ID: AATS	ORIGINALS	YES	NO	N/A
Lab Loc	ation: Broken Arrow. OK 74012	CUSTODY SEALS		Ī	7
Region:	6 Audit No.: 25159/FFG02	Present on package?	x		
Re_Sub	mitted CSF? Yes No X	2. Intact upon receipt?	_ X		
Box No	s): <u> </u>	FORM DC-2			
COMM	ENTS:	Numbering scheme accurate?		x	
_		Are enclosed documents listed?	X		
3	The reviewer clarified the numbering scheme as follows: SDG narrative was pages 1-35B;	5. Are listed documents enclosed?	Х		T
	SDG cover sheet/TR were pages 35C-38:	FORM DC-I			T
	Forms VIII VOA were pages 362-367; and VOA standards data were pages 178-361.	6. Present?	x	[<u> </u>
13	No airbills were available as the samples were delivered in	7. Complete?	X		
	person.	8. Accurate?	X		T
		CHAIN-OF-CUSTODY RECORD(s)			
		9. Signed?	X	1	
		10. Dated?	X		1
		TRAFFIC REPORT(s) PACKING LIST(s)			
		II. Signed?	x		
		12. Dated?	X	}]
		AIRBILLS/AIRBILL STICKER		[T
		13. Present?			X
		14. Signed?			x
		15. Dated?			X
		SAMPLE TAGS	1]	T
		16. Does DC-1 list tags as being included?	_x		<u> </u>
		17. Present?	Х		7
		OTHER DOCUMENTS			T
		18. Complete?	х	1	
		19. Legible?	х		T
		20. Original?		X	
Over for a	dditional comments.	20a.If "NO", does the copy indicate where original documents are located?	х		
Audited b	<u> </u>	Maria Missler / ESAT Data Reviewer	Date Date		17
Audited b	y:		Date		
	Signature	Printed Name: Title			
	TO BE COM	IPLETED BY CEAT			
Date R		Date Entered: Date Reviewed	:		
	Entered by:				
	Reviewed by:				
	Signature	Printed Name/Title			

Page 1 of 2

In Reference to Case No(s): 25159 SDG: FFG02 (0-1780)

Contract Laboratory Program REGIONAL/LABORATORY COMMUNICATION SYSTEM FAX Record Log

	Laborator	Date of FAX: Laboratory Name: Lab Contact:		January 10, 1997 AATS Harry Borg					
	Region: Regional	Contact	::	<u>M</u> ;	aria Missl	6 er	- ESA	ΛT	-
	FAX initi	ated by	:		Laborat	ory	_	<u> </u>	_Region
In	reference t	o data	for	the	following	fr	action	ıs:	
	BNA	Pest/P	CB						
Sum	mary of Que	stions/	Isst	ies:					

St

 $\hat{i}=jx_{-j}=1$

A. BNA

- Sample FF-G11, Form I SV-TIC: The TIC's at 22.326 and 1. 22.595 min. were assigned the same CAS number and compound name. Please revise and resubmit this form.
- Sample FF-G17RE, Form I SV-TIC: The TIC's at 12.764 and 2. 13.089 min. were assigned the same CAS number and compound name. 'Please revise and resubmit this form.
- Sample FF-G16: On the quantitation report, the peak identified as benzo(a) anthracene better matches the retention time identification criteria for chrysene. Please correct and resubmit the quantitation and results reports.
- 4. The following peaks appear to meet the TIC intensity criteria but were not reported. Please revise Forms I SV-TIC to include these peaks or explain:

Sample	Approximate peak RT (min)
FF-G03	11.4, 12.0
FF-G04	4.95, 11.7, 12.2
FF-G07	4.4
FF-G10	: 7.6

Form V SV, page 464: According to the analysis log (page 2682), the sample analyzed on 12/12/96 at 0029 was 5. identified as "FF-G01", not FF-G06 as reported on this form. Please clarify this discrepancy.

FAX COMMUNICATION LOG

Continuation Page 2
Laboratory/Contact AATS / Harry Borg
In Reference To Case No. 25159 SDG: FFG02

B. Pest/PCB

- 1. Forms VI PEST-2, pages 2327, 2328, 2329, and 2330: The reviewer was unable to reproduce the calibration factors reported for the two surrogates based on the raw data (pages 2396-2409 and 2449-2462). Please correct and resubmit these forms to match the raw data or demonstrate your calculations.
- 2. Method blank PBLKSC, page 2490: According to the SOW (OLM03.0, D-73/PEST, 12.1.2.4) the method blank acceptance criteria apply independently to each analytical column. The integration report (page 2490) shows the presence of endosulfan sulfate on column DB-17 above the CRQL. Please comment on this non-compliance.

NOTE: Any laboratory resubmission should be submitted either as an addendum to the original CSF with a revised Form DC-2 or submitted as a new CSF with a new Form DC-2 (OLM03.0, p. B-29), except those containing only replacement pages. Custody seals are required for all CSF resubmission shipments.

Please respond to the above items. Region 6 resubmissions may be included with CCS response or sent separately within 7 days to:

Mr. Mahmoud El-Feky
U.S. EPA Region 6 Laboratory
10625 Fallstone Road
Houston, TX 77099

If you have any questions, please contact me at (713) 988-2995.

Marie Kliss/er January 10, 1997
Signature Date

Distribution: (1) Lab Copy (2) Region Copy



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6 HOUSTON BRANCH 10625 FALLSTONE RD. HOUSTON, TEXAS 77099

MEMORANDUM

Date:	1-21-1997
Date:	オークオーエンフィ

Subject: Contract Laboratory Program Data Review

Melvin L. Ritter, ESAT RPO, 6MD-HC From:

To: L. Biasco , 6SF-RA

Site:	WILCOX OIL	 	<u> </u>	
Case#:	25159	 		
SDG#:	FF-G02			

The EPA Region 6 Houston Branch ESAT data validation team has completed a review of the submitted Contract Laboratory Program (CLP) data package for the referenced site. The samples analyzed and reviewed are detailed in the attached Regional data review and assessment report for this case.

The data package was found to be:

- Acceptable: No major problems with data package.
- Provisional: Use of data requires caution. (X) Data is acceptable for Regional use. Problems are noted in the review report.
- () Unacceptable: Some or all of data should not be used. Problems are noted in the review report.

Questions regarding the data review report can be addressed to me.

Attachments

R. Flores, Region 6 CLP/TPO

M. El-feky, Region 6 Data Coordinator

Files (2)

LOCKHEED MARTIN SERVICES GROUP 10101 Southwest Freeway, Suite 500 HOUSTON, TX 77074

MEMORANDUM

DATE: January 10, 1997

TO: Dr.

Melvin Ritter, ESAT RPO, Region vi Tom C. H. Chiang, ESAT ETM, Region VI FROM: Dr.

CLP Data Review SUBJECT: TDF # 6-7113A REF: ESAT # 0-1780

25159 Attached is the data review summary for Case #_ FFG02 SDG #

Wilcox Oil Site __

COMMENTS:

CONTRACTUAL ASSESSMENT OF THE DATA PACKAGE I.

A. The data package contained the following contractual noncompliance as determined by the hard copy data review and the CCS audit.

> The laboratory extracted BNA sample FF-G06RE 29 days after sample receipt (OLM03.0, D-18/SVOA, 8.4.1). All results were qualified for this sample because of the excessive holding time.

- B. The data package contained the following contractual noncompliance as determined by the hard copy data review but not by CCS.
 - Pest/PCB method blank PBLKSC had a peak on the DB-17 column above the CRQL that interfered with the detection of endosulfan sulfate (OLM03.0, D-73/PEST, 12.1.2.4). This deficiency caused the raised quantitation limits for endosulfan sulfate in samples FF-G15 and FF-G23.
 - The data package arrived three days late.

TECHNICAL/USABILITY ASSESSMENT OF THE DATA PACKAGE II.

A total of 2,500 results were reviewed for this data package. The data package is technically provisional and technical deficiencies are listed below.

- One BNA sample was extracted 29 days after sample collection.
- 2. Four VOA and eight BNA samples had low internal standard responses.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6

HOUSTON BRANCH 10625 FALLSTONE ROAD HOUSTON, TEXAS 77099

ORGANIC REGIONAL DATA ASSESSMENT

CASE NO	25159		SITE		Wilcox	Oil
LABORATORY_	AATS		NO. OF	SAMPLE	S <u>20</u>	
CONTRACT#	68-D5-0022		MATRIX_		Soi	1
SDG#	FFG02		REVIEW	ER (IF)	NOT ESD) <u> </u>	SAT
SOW# RAS	SOW OLM03.2		REVIEW	er's nai	ME <u>Maria M</u>	<u>issler</u>
ACCT#_7FAXJ	N28 SF# FAX	$\overline{\text{UZZ}}$	COMPLET	rion da'	TE January	10, 1997
					-	
SAMPLE NO.	<u>FF-G02</u>	FF-G06	FI	7-G10	FF-G14_	FF-G18
	FF-G03	FF-G07	FI	7-G11	FF-G15	<u>FF-G21</u>
	FF-G04	FF-G08	FI	7-G12	FF-G16	FF-G22
	FF-G05	FF-G09	FI	F-G13	FF-G17	FF-G23

DATA ASSESSMENT SUMMARY

-	HOLDING BINDS	VOA	BNA	PEST
	HOLDING TIMES	 ,		
2.	GC/MS TUNE/INSTR. PERFORM.		Q	
З.	CALIBRATIONS	M	<u> </u>	O
4.	BLANKS			M
5.	SMC/SURROGATES		O	
6.	MATRIX SPIKE/DUPLICATE			Q
7.	OTHER QC	<u>M</u>		
8.	INTERNAL STANDARDS	<u> </u>	M	<u>N/A</u>
9.	COMPOUND ID/QUANTITATION			<u>M</u>
10.	PERFORMANCE/COMPLETENESS	O	O	O
11.	OVERALL ASSESSMENT	<u>M</u>	M	<u> </u>

O = Data had no problems.

M = Data qualified because of major or minor problems.

Z = Data unacceptable.

NA = Not applicable.

ACTION ITEMS: BNA sample FF-G06RE was extracted 19 days past the holding time requirement. One Pest/PCB method blank had a peak that interfered with the detection of endosulfan sulfate above the CRQL on one column.

AREA OF CONCERN: The extraction holding time was excessive for BNA sample FF-G06RE. A contaminant in the method blank obscured the detection of endosulfan sulfate in two Pest/PCB samples. Acetone failed technical calibration criteria. Four VOA and eight BNA samples had low internal standard responses. Results were inconsistent for a pair of field duplicates. The two column quantitation results differed by more than 25 percent for three Pest/PCB samples. The data package arrived three days late.

COMMENTS/CLARIFICATIONS REGION 6 CLP QA REVIEW

CASE 25159 SDG FFG02 SITE Wilcox Oil LAB AATS

The following is a summary of sample qualifiers used by Region 6 in reporting this CLP data:

No.	<u> Acceptable</u>	Provisional	<u>Unacceptable</u>
VOA BNA	<u>14</u> 11	<u> </u>	
PEST	16	4	

COMMENTS: The case consisted of 20 soil samples for complete RAS organic analysis. The OTR/COC Record designated sample FF-G02 for MS/MSD analyses and samples FF-G07/FF-G08, FF-G17/FF-G18, and FF-G22/FF-G23 as field duplicate pairs. The laboratory analyzed at low levels the VOA/BNA soil samples.

The data package contained the following contractual non-compliances.

BNA sample FF-G06RE was extracted 19 days past the contractual holding time limit. Only sample FF-G06RE is billable even though the laboratory also submitted data for the original analysis FF-G06.

The Pest/PCB method blank PBLKSC had a peak interfering with the detection of endosulfan sulfate above the CRQL on one column.

The data package arrived 3 days late for the contractual 35-day turnaround time.

VOA Samples FF-G11, FF-G13, FF-G15, and FF-G22 and their reanalyses had low internal standard responses. The reanalyses should be used for all except sample FF-G15.

BNA The extraction holding time for sample FF-G06RE was excessive (29 days past collection). Samples FF-G09, FF-G15, FF-G16, FF-G17, FF-G18, FF-G21, FF-G22, and FF-G23 and their reanalyses had low internal standard responses. To minimize data qualification, the reviewer recommends using some results from the original analysis and some from the reanalysis depending on the associated internal standard performance.

Pest/PCB An interfering contaminant in the method blank obscured the detection of endosulfan sulfate in samples FF-G15 and FF-G23.

CASE __25159 SDG __FFG02 __SITE __Wilcox Oil __LAB __AATS_

Comments (continued)

Acetone, methylene chloride, phenanthrene, pyrene, chrysene, benzo(ghi)perylene, chlordanes, endrin, heptachlor epoxide, endosulfan sulfate, endrin ketone, endrin aldehyde, and endosulfan II were reported in a few samples above the CRQL's. Some results are provisional for six VOA, nine BNA, and four Pest/PCB samples because of problems with holding time, calibration, blank contamination, field duplicate consistency, internal standard responses, and compound quantitation.

The technical usability of all reported sample results is appropriately indicated by ESAT's final data qualifiers in the attached Data Summary Tables. An Evidence Audit was conducted for the Complete Sample Delivery Group File (CSF), and the Evidence Inventory Checklist is attached to this report.

NOTE: THE FOLLOWING REVIEW NARRATIVE ADDRESSES BOTH CONTRACTUAL AND TECHNICAL ISSUES. THE ASSESSMENT MADE FOR EACH QC PARAMETER IS SOLELY BASED ON THE TECHNICAL DATA USABILITY, WHICH MAY NOT NECESSARILY BE AFFECTED BY CONTRACTUAL PROBLEMS.

1. Holding Times: Provisional. All samples met the contractual holding time requirement except as follows. No technical holding time criteria exist for soil samples.

BNA sample FF-G06RE was extracted 29 days after collection and receipt. In the reviewer's opinion, all results are estimated and biased low because of the excessive holding time.

- 2. Tuning/Performance: Acceptable. The BFB and DFTPP analyses met GC/MS tuning criteria. The VOA and BNA sample analyses were within 12 hours of the respective BFB/DFTPP analyses. The Pest/PCB analyses met performance guidelines.
- 3. Calibrations: Provisional. Target compounds met contractual calibration criteria. The acetone result is estimated in VOA sample FF-G17 because of a technical %D calibration deficiency.

Pest/PCB The reviewer was unable to reproduce the following calibration results on both analytical columns based on the raw data submitted:

the TCX and DCB initial calibration factors; and

the TCX and DCB calculated amounts in all INDAM/INDBM calibration verification analyses.

CASE __25159 SDG __FFG02 SITE __Wilcox Oil __LAB __AATS

Calibrations, Pest/PCB (continued)

The results reported by the laboratory differed consistently by a factor of two from the reviewer-calculated ones. The reviewer did not qualify results because the reported %RSD and %D values were not affected. However, the laboratory was contacted for clarification of this discrepancy.

4. Blanks: Provisional. The VOA and BNA method and storage blanks met contractual requirements.

BNA The method blanks contained phthalates below the CRQL's. In the reviewer's opinion, all "B"-flagged laboratory results should be considered as undetected (U) because the sample concentrations were less than 10X the associated blank concentrations.

Pest/PCB Soil method blank PBLKSC contained a peak above the CRQL that interfered with the identification of endosulfan sulfate on one column. The reviewer qualified as undetected the endosulfan sulfate results in associated samples FF-G15 and FF-G23 because of possible laboratory contamination.

In the reviewer's opinion, the following results should be used as raised quantitation limits because of the presence of the analyte in the associated method blanks (below the CRQL's) on one or both columns:

endrin aldehyde in sample FF-G12; and

y-chlordane in sample FF-G17.

The y-chlordane result in sample FF-G18 is biased high and "B" flagged because of possible laboratory contamination.

5. System Monitoring Compounds (SMC)/Surrogates: Acceptable. The SMC and surrogate recoveries met QC criteria except as follows.

BNA Sample FF-G06 had high recoveries for two base-neutral surrogates. The re-extraction had acceptable recoveries and should be used.

ij.

Samples FF-G17RE, FF-G18RE, FF-G21RE, and FF-G22RE had high recoveries for two base-neutral surrogates. No results were qualified for the high recoveries as no analytes were detected above the CRQL's in these samples.

CASE 25159 SDG FFG02 SITE Wilcox Oil LAB AATS

5. System Monitoring Compounds (SMC)/Surrogates (continued)

Pest/PCB All reported surrogate recoveries were a factor of two lower than the reviewer-calculated ones. This problem is a consequence of the incorrect calibration factors reported for the initial calibrations (see section 3). All surrogate recoveries were within QC limits based on the reviewer's calculations.

6. Matrix Spike/Matrix Spike Duplicate: Acceptable. The MS/MSD analyses met recovery and precision requirements for all fractions.

7. Other QC:

Field Duplicates: Provisional. The acetone and methylene chloride results are estimated in field duplicates FF-G17 and FF-G18 because of inconsistent concentrations (differ by a factor of two or more). Other field duplicate results were consistent.

8. Internal Standards: Provisional. The internal standard (IS) responses and retention times were within the QC limits with the following exceptions.

VOA Samples FF-G11, FF-G13, FF-G15, and FF-G22 were reanalyzed because of low IS responses. The reanalyses had low but improved responses for samples FF-G11, FF-G13, and FF-G22, so the reanalysis data should be used. The original analysis data should be used for sample FF-G15.

Results are estimated and quantitation limits biased low for analytes associated with the following IS's because of the low IS responses:

Samole	IS
FF-G11RE	IS3
FF-G13RE	IS1, IS3
FF-G15	IS2, IS3
FF-G22RE	TS3

BNA Sample FF-G06 had low internal standard responses, but the reanalysis had acceptable responses, and data should be used. Sample FF-G02MSD had one low IS response, but reanalysis was not required.

CASE 25159 SDG FFG02 SITE Wilcox Oil LAB AATS

8. Internal Standards, BNA (continued)

Samples FF-G09, FF-G15, FF-G16, FF-G17, FF-G18, FF-G21, FF-G22, and FF-G23 and their reanalyses had outlying IS responses. To minimize data qualification, the reviewer recommends using some results from the original analysis and some from the reanalysis depending on the associated IS performance. The results designated for use are indicated on the attached data summary tables.

The reviewer qualified results as estimated and quantitation limits biased low for analytes associated with the following IS's because of the low IS responses:

Sample		IS	
FF-G09	IS6		
FF-G15	IS4,	IS5,	IS6
FF-G16	IS4,	IS5,	IS6
FF-G17	IS5,	IS6	
FF-G18	IS5,	IS6	
FF-G21	IS5,	IS6	
FF-G22	IS4,	IS5,	IS6
FF-G23	IS5,	IS6	

9. Compound Identity/Quantitation: Provisional. Acetone, methylene chloride, phenanthrene, pyrene, chrysene, benzo(ghi)-perylene, chlordanes, endrin, heptachlor epoxide, endosulfan sulfate, endrin ketone, endrin aldehyde, and endosulfan II were reported in a few samples above the CRQL's. Compound identification and quantitation met contractual guidelines for the VOA and BNA samples. GC/MS confirmation was not feasible for the Pest/PCB positive results.

Pest/PCB The "P" flagged results above CRQL's are estimated in samples FF-G15, FF-G17, FF-G18, and FF-G23 because the quantitation results between the two columns differ by more than 25 percent.

10. Performance/Completeness: Acceptable. The laboratory response to the CCS request was received and should be used. The data package was complete with minor deficiencies. The laboratory was contacted for correction and resubmission (see attached FAX Record Log).

CASE __25159 SDG __FFG02 __SITE __Wilcox_Oil __ LAB __AATS

11. Overall Assessment: Data are acceptable for 14 VOA, 11 BNA, and 16 Pest/PCB samples.

VOA Some results are estimated for samples FF-G11RE, FF-G13RE, FF-G15, FF-G17, FF-G18, and FF-G22RE because of a calibration deficiency, inconsistent field duplicate results, and low internal standard responses.

BNA Some results are estimated for samples FF-G06RE, FF-G09, FF-G15, FF-G16, FF-G17, FF-G18, FF-G21, FF-G22, and FF-G23 because of a holding time problem and low internal standard responses.

Pest/PCB Some results are estimated for samples FF-G15, FF-G17, FF-G18, and FF-G23 because of blank contamination and compound quantitation deficiencies.

ORGANIC DATA QUALIFIER DEFINITIONS

The following definitions provide brief explanations of the ESAT-Region 6 qualifiers assigned to results in the Data Summary Table.

- W Not detected at reported quantitation limit.
- N Identification is tentative.
- J Estimated value.
- R Unusable.
- Migh biased. Actual concentration may be lower than the concentration reported.
- V Low biased. Actual concentration may be higher than the concentration reported.
- F+ A false positive exists.
- F- A false negative exists.
- B This result may be high biased because of laboratory/field contamination. The reported concentration is above 5X or 10X the concentration reported in the method/field blank.
- **UJ** Estimated quantitation limit.
- T Identification is questionable because of absence of other commonly coexisting pesticides.
- * Result not recommended for use because of associated QA/QC performance inferior to that from other analysis.

Case No.: 25159

SDG:

FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix:

SOIL

Units:

ug/Kg

VOLATILES	FLAG	FLAG	FLAG	FLAG_	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	 FF-G02	FF-G03	FF-G04	FF-G05	FF-G06	FF-G07	FF-G08
Chloromethane	12 0	12 U	13 U	12 U	13 U	13 U	13 U
Bromomethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Vinyl chloride	12 0	12 U	13 U	12 U	13 U	13 U	13 U
Chloroethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Methylene chloride	1 J	1 J	2 J	2 J	13 0	13 Ü	2 J
Acetone	12 U	12 Ü	13 U	12 U	13 U	13 U	13 U
Carbon disulfide	12 U	12 U	13 U	12 0	13 U	13 U	13 U
1,1-Dichloroethene	12 U	12 U	13 U	12 U	13 U	13 0	13 U
1,1-Dichloroethane	12 ប	12 U	13 U	12 U	13 U	13 U	13 U
1,2-Dichloroethene (total)	12 U	12 U	13 U	12 U	13 U	13 U	1.3 U
Chloroform	12 U	12 U	13 U	12 U	13 U	13 0	13 U
1,2-Dichloroethane	12 U	12 U	13 U	12 0	13 U	13 U	13 U
2-Butanone	12 U	12 U	13 U	12 U	13 0	13 U	13 U
l,l,l-Trichloroethane	12 U	12 U	13 U	12 Ü	13 U	13 U	13 U
Carbon tetrachloride	12 U	12 U	13 U	1? U	13 U	13 Ū	13 U
Bromodichloromethane	12 U	12 T	13 U	12 ปี	13 U	13 U	13 σ
1,2-Dichloropropane	12 U	12 U	13 U	12 T	13 U	13 U	13 U
cis-1,3-Dichloropropene	12 U	12 T	13 U	12 U	13 Ŭ	13 U	13 ΰ
Trichloroethene	12 U	12 U	13 U	12 U	13 Ū	13 Ū	13 U
Dibromochlorcmethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,1,2-Trichloroethane	12 U	12 U	13 U	12 U	13 U	13 ΰ	13 U
Benzene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
trans-1,3-Dichloropropene	12 U	12 U	13 U	12 T	13 Ü	13 U	13 U
Bromoform	12 U	12 U	13 U	12 U	13 U	13 U	13 U
4-Methyl-2-pentanone	12 U	12 U	13 U	12 U	13 Ü	13 U	13 σ
2-Hexanone	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Tetrachloroethene	12 U	12 U	13 U	12 U	13 U	13 U	1,3 U
1,1,2,2-Tetrachloroethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Toluene	12 U	12 U	13 T	12 U	13 U	13 U	13 U
Chlorobenzene	12 U	12 U	13 U	, 12 U	13 U	13 U	13 0
Ethylbenzene	12 U	12 U	13 U	12 U	13 Ū	13 U	13 U
Styrene	12 Ŭ	12 U	13 ปี	12 T	13 U	13 U	13 U
Xylenes (total)	12 T	12 U	13 U	12 T	13 U	13 T	13 U
	_	_	_	_	_	-	_
Sample wt (g):) 5 	5	5	5	. 5	5	5
*Moisture:	18	16	21	19	22	25	23
Dilution Factor:	1	1	1	1	1	1	1
Level:	FOM	LOW	LOW	LOW	LOW	FOM	LOW
	İ						
Number of TIC's:	[1· 	1	1	1	1	0	0

Case No.: 25159

SDG:

FFG02

Restawer: M. Missler

Laboratory: AATS

Matrix:

SOIL

Carts:

ug/Kg

Chlorosechame	VOLATILES	FLAG	FLAG_	F1.	AGFLA:	FLAG	FLA	GFLAG
Stromoschame	EPA SAMPLE NUMBER:	FF-G09	FF-G10	FF-G11	FF-Glire	PF-G12	FF-G13	FF-G13RE
Visy1 chloride 14 0	Chloromethane	! ! 14 U	12 U	12 ਚ	* 12 U	12 U	12 U	* 12 UJv
Chloroethane 14 U 12 U 1	Bromomethane	14 Ü	12 U	12 U	* 12 T	12 U	12 U	* 12 UJv
Nethylene chloride	Vinyl chloride	14 U	12 Ü	12 U	* 120	12 U	12 U	* 12 UJv
Acetone	Chloroethane	14 U	12 U					
Carbon disulfide 1.1-Dichloroethene 14 0 12 0 12 0 12 0 12 0 12 0 12 0 12 0	Methylene chloride	5 J	12 U		•	**		
1.1-Dichloroethere	Acetone	14 U	12 Ü	12 U	* 12 0	12 U	12 0 '	* 12 UJv
1,2-Dichloroethame								
1,2-Dichloroetheme (total)	•	!	'š'		· · · · · · · · · · · · · · · · · · ·			
Chloroform 14 0 12 0 12 0 12 0 12 0 12 0 12 0 12 0	1,1-Dichloroethane	14 U	12 U	12 U	* 120	12 0	12 (1)	× 12 004
1,2-Dichloroethane	= 1	r						
2-Butanone 2Butanone 14 U 12 U 12 U 12 U 12 U 12 U 12 U 12 U			•					
14 U	1,2-Dichloroethane	14 0	12 U	12 0	* 12 U	12 0	12 0	- 12 037
Carbon tetrachloride	2-Butanone	14 U	12 U	12 U	* 12 U	12 U	12 U	* 12 UJv
Bromodichloromethane 14 U 12 U	1,1,1-Trichloroethane	14 U	12 U	12 U	* 12 U	12 U	12 U	± 12 ℧
14 U	Carbon tetrachloride	14 U	12 Ū	12 U	* 12 U	12 U	12 U	* 12 Ū
14 U	Bromodichloromethane	! ! 14 Ŭ	12 U	12 U	* 12 U	12 U	12 U	
Trichloroethane	1,2-Dichloropropane	14 U	12 U	12 U	* 12 U	12 U	12 U	* 1,2 U
Dibromochloromethane 14 U 12 U 12 U 12 U 12 U 12 U 12 U 12 U	cis-1,3-Dichloropropene	14 U	12 U	12 U	* 12 U	12 U	12 U	* 12 U
1.1,2-Trichloroethane	Trichloroethene	 14 U	12 U	12 U	* 12 U	12 U		
Benzene	Dibromochloromethane	14 U	12 U	12 U	* 12 U	12 U		
trans-1,3-Dichloropropene 14 U	1,1,2-Trichloroethane	14 0	12 U	12 U	* 12 U	12 U	12 U	• 12 0
### Bromsform 14 U 12 U	Benzene	14 U	12 U	_	_			
4-Methyl-2-pentanone		14 U		•	_			
2-flexanone 2-flexanone 14 U 12 U 12 U 12 U 12 U 12 U 12 U 12 U	Bromoform	14 U	12 T	12 0	12 0	12 0	12 U	• 12 0
Tetrachloroethene		•						
1,1,2,2-Tetrachloroethane 14 U 12 U 12 U 12 U 12 U 12 U 12 U 12 U 12						•		
Toluene	Tetrachloroethene	14 U	12 U	12 0	* 12 UV	12 0	12 0	* 12 004
Chlorobenzene	1,1,2,2-Tetrachloroethane	14 U	12 U	12 U	* 12 7Jv	12 U	12 U	* 12 UJv
Ethylbenzene	Toluene	14 U	12 U	12 U	* 12 DJv	12 U	12 U	* 12 UJv
Styrene	Chlorobenzene	14 U	12 U	12 U	* 12 1172	12 U	12 U	* 12 UJv
Xylenes (total) 14 U 12 U 12 U 12 U v 12 U v <td>Ethylbenzene</td> <td> 14 U</td> <td>12 0</td> <td></td> <td></td> <td></td> <td></td> <td></td>	Ethylbenzene	 14 U	12 0					
Sample wt (g): 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Styrene	14 U						
*Moisture: 29 18 19 19 20 14 14 Dilution Factor: 1 1 1 1 1 1 1 1 Level: LOW LOW LOW LOW LOW LOW LOW	Xylenes (total)	14 U	12 U	12 0	* 12 U3v	12 U	12 U	* 12 UJV
*Moisture: 29 18 19 19 20 14 14 Dilution Factor: 1 1 1 1 1 1 1 1 Level: LOW LOW LOW LOW LOW LOW LOW	Sample wt (q):	! 5	5	5	5	5	5	5
Dilution Pactor: 1 1 1 1 1 1 1 1 1 1 Level: Low Low Low Low Low Low Low Low Low Low	- ·	į	7.0	10	7.0	20	14	14
Level: LOW LOW LOW LOW LOW LOW		İ						
DEVEL! Son 2500	Dilution Factor:	1 !	1	1	1	1	1	1
Number of TIC's: 0 0 0 0 0 0 1	Level:	LOW	LOW	LOW	FOM	FOM	FOM	LOW
	Number of TIC's:	i 0	o	O	ō	a	o	1

Case No.: 25159

SDG:

FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix:

SOIL

Units:

ug/Kg

VOLATILES	FLAG	FLA	.GFLAG_	PLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G14	FF-G15	FF-G15RE	FF-G16	FF-G17	FF-G18	FF-G21
Chloromethane	 12 U	11 U	11 U *	13 U	12 U	12 U	12 U
Promomethane	ט 12	11 U	11 U *	13 U	12 Ŭ	12 U	12 U
Vinyl chloride .	12 0	11 U	11 U *	13 U	12 U	12 U	12 U
Chloroethane	 12 U	וו ט	11 U *	13 U	12 U	12 U	12 U
Methylene chloride	12 U	2 J	11 U *	13 U	23 J	12 UJ	12 U
Acetone] 1.2 U	11 U	11 U *	13 U	48 J	12 UJ	12 U
Carbon disulfide	12 U	11 U	11 0 *	13 U	12 U	12 U	12 U
1,1-Dichloroethene	12 U	11 U	11 0 *	13 Ű	12 U	12 U	12 U
1,1-Dichloroethane	12 U	11 U	11 0 *	13 T	12 U	12 U	12 U
1,2-Dichloroethene (total)	12 U	11 U	11 0 *	13 T	12 U 12 U	12 U 12 U	12 U 12 U
Chloroform	12 0	11 U	11 U * 11 U *	13 U 13 U	12 U	12 U	12 U
1,2-Dichloroethane	12 U	11 U	11 0 *	13 0	12 U	12 0	12 U
2-Butanone	12 0	11 U	11 U *	13 U	12 U	12 U	12 Ŭ
1,1,1-Trichloroethane	ע 12 מ	11 UJV	11 U *	13 U	12 U	12 U	12 U
Carbon tetrachloride	12 0	11 UJv	11 0 *	13 U	12 U	12 Ū	12 U
Bromodichloromethane	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
1,2-Dichloropropane	12 U	11 037		13 U	12 U	12 U	12 U
cis-1,3-Dichloropropene	12 U	11 UJ v	11 0 *	13 U	12 U	12 U	12 U
Trichloroethene	12 U	11 UJv	11 0 *	13 U	12 U	12 U	12 U
Dibromochloromethane	12 U	11 UJv	11 U *	13 U	12 U	12 U	12 U
1,1,2-Trichloroethane	12 σ	11 UJv	11 0 *	13 Ü	12 U	12 U	12 U
Benzene	12 U	11 UJ V		13 0	12 U	12 U	12 U
trans-1,3-Dichloropropene	12 0	11 UJv		13 Ü	12 U	12 U	12 U
Bromoform	12 U	11 UJv	11 0 *	13 U	12 U	12 U	12 U
4-Methyl-2-pentanone	12 U	11 UJv		13 U	12 U	12 U	12 U
2-Hexanone	12 U	11 UJv		13 U	12 U	12 U	12 U
Tetrachloroethene	12 U	11 111/	11 0 *	13 Ü	12 U	12 U	12 U
1,1,2,2-Tetrachloroethane	12 0	11 W/v	* U II	13 C	13 A	12 U	12 T
Toluene	12 U	11 W/v	11 U *	13 U	12 U	1.2 U	12 U
Chlorobenzene	12 0	11 UJ v	11 0 *	13 0	12 U	12 U	12 U
Ethylbenzene	 12 U	11 UJ v		13 U	12 0	12 U	12 U
Styrene	12 0	11 UJv		13 0	12 U	12 0	12 U
Xylenes (total)	12 U 	11 Wv	11 0 *	13 😈	12 Ü	12 U	12 U
Sample wt (g):	 ! 5	5	S	5	s	5	5
	į		19	24	18	18	18
Moisture:	18 	13	13	24			
, Dilution Factor:	1	1	1	1	1	1	1
Level:	LCW	FOM	FOM	LOW	LOW	LOW	LOW
Number of TIC's:	 0. 	0	0	0	0	0	o

Case No.: 25159

SDG:

FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix:

SOIL

Units:

ug/Kg

VOLATILES	FLAG	FLAG_	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G22 FF-	-G22RE	FF-G23				
Chloromethane	12 U *	12 U	12 U				
Bromomethane	12 U *	12 U	12 U				
Vinyl chloride	12 បី *	12 U	12 U				
Chloroethane	12 U *	12 U	12 U				
Methylene chloride	5 *	12 U	12 U				
Acetone	12 U *	12 U	12 U				
Carbon disulfide	12 U *	12 U	12 U				
1.1-Dichloroethene	12 U *	12 U	12 U				
1,1-Dichloroethane	12 U *	12 U	12 U				
1,2-Dichloroethene (total)	12 U *	12 Ü	12 U				
Chloroform	12 U *	12 Ų	12 U				
1,2-Dichloroethane	12 U *	12 U	· 12 U				
2-Butanone	12 U *	12 U	12 U				
1,1,1-Trichloroethane	12 U *	12 U	12 U				
Carbon tetrachloride	12 U *	12 U	12 U				
Bromodichloromethane	12 U *	12 U	12 U				
1,2-Dichloropropane	12 U *	12 U	12 U				
cis-1,3-Dichloropropene	12 U *	12 U	12 U				
Trichloroethene	12 U *	12 U	12 U				
Dibromochloromethane	12 U *	12 U	12 U				
1,1,2-Trichloroethane	12 U *	12 U	12 U				
Benzene	12 Ü *	12 U	12 U				
trans-1,3-Dichloropropene	12 U *	12 U	12 U				
Bromoform	12 U *	12 U	12 0				
4-Methyl-2-pentanone	12 Ü *	12 UJv	12 U				
2-Hexanone	12 U *	12 UJv	12 U				
Tetrachloroethene	12 U *	12 UJv	12 U				
1,1,2,2-Tetrachloroethane	12 U *	12 UJv	12 U				
Toluene	12 U *	12 UJv	12 U				
Chlorobenzene	12 0 *	12 UJv	12 U				
Ethylbenzene	12 U *	12 UJv	12 U				
Styrene	12 0 *	12 UJv	12 U				
Xylenes (total)	12 0 *	12 UJv	12 U				
İ			_				
Sample wc (g): [5	5	5				
%Moisture:	18	18	18				
Dilution Factor:	1	1	1				
Level:	LOW	LOW	FOM				
Number of TIC's:	0.	Q	0				

Case No.: 25159

SDG:

FFG02

Reviewer:

M. Missler

Laboratory: AATS

Matrix:

SOIL

Units:

s: ug/Kg

semivolatiles		FLAG	_FLAG_		FLAG		_FLAG_		FLP	.G		FLAG_		_FLAG
EPA SAMPLE NUMBER:	FF-G02	FF-G03		FF-G04		FF-G05		FF-G06		FF-G06	RE		FF-G07	
Phenol	400	U 390	U	420	σ	410	U	420	υ	* 4	20	UJv	440	U
bis(2-Chloroethyl)ether	400	U 390	U	420	U	410	U	420	Ū	* 4	20	IJν	440	U
2-Chlorophenol	400	U 390	U	42	J	410	ū	420	ប	* 4	20	vŪ	440	U
1,3-Dichlorobenzene	400	υ 390	ט	420		410		420	-		20		440	
1,4-Dichlorobenzene	400				J	410		420		-	20		440	
1,2-Dichlorobenzene	400	ນ 390	U	420	U	410	U	420	U	* 4	20	ŰĴΨ	440	U
2-Methylphenol	400			420		410		420 420				UJv UJv	440 440	_
2,2'-Oxybis (1-chloropropane)	400			420 420		410 410		420	-		_	UJV UJV	440	
4-Methylphenol	400	U 390	u	420	u	410	U	420		· •	20	00 V	440	v
N-Nitroso-di-n-propylamine	400			420 420		410 410		420 420				UJv UJv	440 440	
Hexachloroethane Nitrobenzene	400			420 420		410		420				Wv	440	
Nitropenzene	400	0 390	u	420	Ü	110	Ū	420	Ü				440	•
Isophorone	400			420		410		420				ŪJ∨	440	
2-Nitrophenol	400			420		410		420				ÜŰV	440	
2,4-Dimethylphenol	400	Ü 390	Ū	420	σ	410	Ū	420	U	- 4	20	IJν	440	U
bis(2-Chloroethoxy)methane	400			420		410		420			20		440	-
2,4-Dichlorophenol	400			420		410		420				IJν	440	
1,2,4-Trichlorobenzene	400	ປ 390	U	27	J	410	U	420	U	* 1	20	UJν	440	U
Naphthalene	400	U 390	ប	420	U	410	Ū	420			-	IJν	440	U
4-Chloroaniline	400	υ 390	Ü	420		410		420				UJv	440	
Kexachlorobutadiene	400	U 390	ū	420	ŭ	410	U	420	σ	* 4	20	IJν	440	U
4-Chloro-3-methylphenol	400	U 390	U	34	J	410	U	420	Ü	* 4	20	UJ∨	440	U
2-Methylnaphthalene	400	_		420	σ	60	J	420	Ū	* 4	20	UJν	440	U
Hexachlorocyclopentadiene	400	Ω 390	Ū	420	Ū	410	U	420	U	* 4	20	UJν	440	U
2,4,6-Trichlorophenol	400	U 390	σ	420	U	410	U	420	U	* 4	20	ህኒ	440	U
2,4,5-Trichlorophenol	1000	U 99Q	. บ	1000		1000		1100				UJV	1100	
2-Chlcronaphthalene	400	Ο 390	U	420	U	410	Ü	420	U	* 4	20	IJν	440	σ
2-Nitroaniline	1000			1000		1000		1100				UJv	1100	
Dimethylphthalate	400			420		410		420				UJv	440	
Acenaphthylene	400	ບ 390	Ū	420	σ	410	บ	420	U	* 4	120	IJΨ	440	U
2,6-Dinitrotoluene	400		_	420		410		420				IJν	440	
3-Nitroaniline	1000			1000		1000		1100				UJv	1100	
Acenaphthene	400	t 390	U	32	J	22	J	420	u	•	12U	UJv	440	U
2,4-Dinitrophenol	1000	T 990	σ	1000	U	1000	U	1100	υ			ŲĴV	1100	_
4-Nitrophenol	1000	ប 990	Ū	1000		1000		1100				UJV	1100	
Dibenzofuran	400	T 390	ט ו	420	σ	410	ਹ	420	U	*	420	UJv	440	7
2,4-Dinitrotoluene	! 400			420		410			σ			Wv		U (
Diethylphthalate	400			420		410			U			ΩJV		ט כ
4-Chlorophenyl-phenylether	[400	U 396	ט כ	420	σ	410	U	420	U	*	420	IJν	440	ס נ
Fluorene	400	_	U	420		410			U			Wv		υ σ
4-Nitroaniline	1000		ט נ	1000		1000		1100				UJv	1100	
4,6-Dinitro-2-methylphenol	1000 	। ਹ 99() U	1000	U	1000	U	1100	U	- 1	T00	UJV	110	U
N-Nitrosodiphenylamine	400	-	υ	420		410			U			UJv		0 0
4-Bromophenyl-phenylether	400		ס ס		υ		ס כ		U			UJv		U 0
Hexachlorobenzene	j 400	r 391	ט ט	420	ט ט	410	ט נ	420	U	-	420	UJv	44	U 0
Pentachlorophenol	1000		υ 0	1000		1000		1100				UJv	110	
Phenanthrene	400		σ		U (J	46		*		UJV		0 U
Anthracene	400	ਹ 39∙	U	420	ט ט	410	ט ט	420	ט נ	•	420	UJv	44	0 υ

Case No.: 25159

SDG:

FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units:

ug/Kg

SEMIVOLATILES		_FLAG	<u> </u>	_FLAG_		_FLAG_		_FLAG_		FL	AG	FLAG_	 .	_FLAG
EPA SAMPLE NUMBER:	FF-G02		FF-G03		FF-G04		FF-G05		FF-G06		FF-G06	E	FF-G07	
Carbazole	400	U	390	Ū	420	σ	410	U	420	_		O UJv	440	
Di-n-butylphthalate	400	U	390	Ü	420	σ	410	U	420			0 UJv	440	-
Fluoranthene	400	U	390	U	420	σ	130	J	420	U	* 42	O UJV	440	U
Pyzene	400	σ	390	U	420	U	180	_	420	-		0 UJv	440	
Butylbenzylphthalate	35	J	36	J		J		J	420			O WV		J
3,3'-Dichlorobenzidine	400	U	390	Ū	420	U	410	Œ	420	Ū	* 42	0 UJv	440	Ū
Benzo (a) anthracene	400	U	390	σ	420	U	100		420	_		O UJv	440	_
Chrysene	400	U	390	U	420	U	150	J	420		_	VUU 0	440	-
bis(2-Ethylhexyl)phthalate	400	U	390	U	420	U	410	σ	420	Ū	* 42	O DJA	440	'n
Di-n-octylphthalate	400	U	390	σ	420	U	410	U	420	-		v i 0 03v	440	_
Benzo(b) fluoranthene	400	U	390	Ų	420	σ	90	J	420			O UJv	440	-
Benzo(k) fluoranchene	400	U	390	Ū	420	σ	84	J	420	U	* 43	O DJV	440	U
Benzo(a)pyrene	400	U	390	σ	420	σ	100	_	420	-		0 UJv	440	_
Indeno(1,2,3-cd)pyrene	400	U	390	U	420	U	410	-	420	_		O OJV	440	
Dibenz(1,h)anthracene	400	U	390	Œ	420	U	410	Ū	420	U	+ 43	O UJV	440	U
Benzo(g,h,i)perylene	400	U	390	ū	420	σ	410	σ	420	σ	* 43	vED 0.	440	U
Sample wt (g):	30		30		30		30		30		:	10	30	ŀ
<pre>*Moisture:</pre>	18		16		21		19		22		:	:2	25	i
Dilution Factor:	1		1		1		1		1			1	1	
Level:	LOW		LOW		LOW		LOW		LOW		L	W	LOW	ī
Number of TIC's:	10		9		9		22		20		:	15	33	ŀ

Case No.: 25159

FFG02 SDG:

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units:

ug/Kg

semivolatiles	F	LAG	_FLA	G	_FL	AG		FLAG_		_FLAG_		FLAG_		_FLAG
EPA SAMPLE NUMBER:	 FF-G08	FF-G09		FF-G09RE		FF-G	10		FF-G11		FF-G12		FF-G13	
Phenol	 430 U	460	σ.	* 460	IJ	4	00	σ	410	σ	410	ซ	380	U
bis(2-Chloroethyl)ether	430 U			* 460	Ï	4	00	U	410	U	410	ប	380	Ū
2-Chlorophenol	430 U	460	U :	* 460	ប	4	00	Ü	410	U	410	σ	380	U
1,3-Dichlorobenzene	 430 U	460	υ,	4 60	U	_	00		410		410		380	
1,4-Dichlorobenzene	430 U	460	י ט				00		410		410		380	
1,2-Dichlorobenzene	430 U	460	י ט	* 460	Ū	4	00	U	410	U	410	σ	380	σ
2-Methylphenol	430 U						00		410		410		380	
2,2'-Oxybis(1-chloropropane)	430 U						00		410		410		380	
4-Methylphenol	430 U	460	ប :	460	ט	4	00	U	410	u	410	U	380	U
N-Nitroso-di-n-propylamine	43C J						00		410		410	-	380	-
Hexachloroethane	430 U		•		_		00		410		410		380	
Nitrobenzene	430 U	460	σ,	* 460	U	4	00	u	410	u	410	U	380	U
Isophorone	430 U	460	σ .	460	IJ	4	00	U	410	U	410	U	380	U
2-Nitrophenol	430 U	460	Ω,	* 460	ប	4	00	σ	410	Ű	410	Ü	380	Ū
2,4-Dimethylphenol	430 U	460	υ .	* 460	IJ	4	00	σ	410	Ū	410	Ţ	380	ט
bis(2-Chloroethoxy)methane	430 U	460	α .	460	U		00		410		410		380	
2,4-Dichlorophenol	430 U	460	U .				00		410		410		380	
1,2,4-Trichlorobenzene	430 U	460	י ט	460	IJ	4	00	σ	410	U	410	U	380	U
Naphthalene	430 U	460	ช +	460	U	4	00	U	410	U	410	ט	380	σ
4-Chloroaniline	430 U		י ט	• 460	U	4	00	U	410	U	410	υ	380	U
Hexachlorobutadiene	430 U	460	U 1	460	Ū	4	00	Ü	_410	U	410	ט	380	υ
4-Chloro-3-methylphenol	430 U	460	u ,	460	ប	4	00	U	410	Ū	410	U	380	ប
2-Methylnaphthalene	430 U	460	σ .	* 460	ប	4	00	U	410	U	410	υ	380	ប
Hexachlorocyclopencadiene	430 U	460	U	460	Ū	* 4	00	U	410	U	410	U	380	U
2,4,6-Trichlorophenol	430 U	460	U	460	U	* 4	00	σ	410	U	410		380	
2,4,5-Trichlorophenol	1100 U	1200	U	1200	Ū		00		1000		1000		960	
2-Chloronaphthalene	430 U	460	Ü	460	U	* 4	00	ប	410	U	410	U	380	υ
2-Nitroaniline	1100 U	1200	σ	1200	U		00		1000		1000		960	
Dimethylphthalate	430 U			460			00		410		410		380	
Acenaphthylene	430 U	460	U	460	U	* 4	00	U	410	U	410	U	380	U
2,6-Dinitrotoluene	430 U	460	ប	460	U	* 4	00	U	410	U	410	U	380	ט ו
3-Nitroaniline	1100 U	1200	υ	1200	σ	* 10	00	U	1000	σ	1000	α	960	U
Acenaphthene	430 U	460	ប	460	ū	* 4	00	ū	410	σ	410	Ū	380	U
2,4-Dinitrophenol	1100 t	1200	ט	1200	U	• 10	00	σ	1000	σ	1000	ŭ	960	U
4-Nitrophenol	1100 U	1200	σ	1200	U	* 10	00	U	1000	Ū	1000	Ü	960	Ţ
Dibenzofuran	430 U	460	ŭ	460	U	* 4	00	U	410	U	410	U	380	υ υ
2,4-Dinitrotoluene	1 430 U	460	ប	460	σ	* 4	00	ប	410	Ū	410	σ	380	ਹ
Diethylphthalate	430 U	460	Ü	460	σ	* 4	00	U	410	Ü	410	U	386	U
4-Chlorophenyl-phenylether	430 U	460	Ū	460	U	* 4	00	Ū	410	ū	410	U	380	O CI
Fluorene	i 430 U	460	U	460	Ū	÷ 4	00	U	410	υ	410	υ		ס כ
4-Nitroaniline	1100. T	J 1200	U	1200	ប	* 10	00	U	1000	U	1000	ŭ	96	0 0
4,6-Dinitro-2-methylphenol	1100 T	1200	U	1200	U	* 10	100	U	1000	U	1000	σ	96	υ σ
N-Nitrosodiphenylamine	 430 C	460	U	460	σ	+ 4	00	σ	410		410			0 0
4-Bromophenyl-phenylether	430 0			460			100		410		410			0 U
Hexachlorobenzene	430 T	J 460	U	460	Ū	* 4	100	σ	410	U	41,0	U	38	0 U
Pentachlorophenol	1 1100 t	J 1200	σ	1200	U	* 14	000	U	1000	ם ו	1000		96	0 U
Phenanthrene	210				U		100		410			J		0 U
Anthracene	430 0	J 460	σ	460	U	* .	F00	ប	410	U	410	U	38	0 U
	1													

Case No.: 25159

SDG:

FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix:

SOIL

Units:

ug/Kg

SEMIVOLATILES		_FLAG_		_FLA	G	_FL	AG_		FLAG		_FLAG		_FLAG_		_FLAG
EPA SAMPLE NUMBER:	FF-G08		FF-G09		FF-G09RE			FF-G10		FF-G11		FF-G12		FF-G13	
Carbazole	i 46	J	460	Ü	460	U	*	400	ប	410	U	410	Ū	380	U
Di-n-butylphthalate	430	Ū	460	U	460	U	*	400	U	410	U	23	J	380	σ
Pluoranthene	240	J	460	U	460	U	*	400	Ū	410	σ	68	J	380	ũ
Pyrene	1 170	J	49	J	43		*	400	U	410	σ	62	J	380	U
Butylbenzylphthalace	48	J	29	J	32		*	400	U	25	J	21	J	380	U
3,3'-Dichlorobenzidine	430	U	460	U	460	Ū	*	400	U	410	U	410	U	380	Ü
Benzo (a) anthracene	430	σ	460	Ü	460	U	*	400	U	410	σ	36	J	380	u
Chrysene	96	J	49	J	44		*	400	Ū	410	O	50	J	380	Ū
bis(2-Ethylhexyl)phthalate	430	U	460	Ų	460	Ü	*	400	U	410	U	410	σ	380	Ū
Di-n-octylphthalate	430	Ū	460	UJv	460	U		400	U	410	U	410	σ	380	τ
Benzo (b) fluoranchene	430	U	31	J	29		*	400	U	410	U	42	J	380	U
Benzo(k) fluoranthene	430	Ü	31	J	29		*	400	U	410	U	51	J	380	Ū
Benzo (a) pyrene	430	σ	27	ű	24		•	400	U	410	Ţ	36	J	380	σ
Indeno(1,2,3-cd)pyrene	430	U	460	IJν	1 60	U	*	400	U	410	U	410	U	380	U
Dibenz(a,h)anthracene	430	U	460	UJv	460	ŢŢ	*	400	U	410	U	410	u	380	U
Benzo(g,h,i)perylene	430	U	460	UJv	460	Ū	•	400	Ü	410	U	410	U	380	υ
Sample wt (g):	30		30		30			30		30		30		30	
%Moisture:	23		29		29			18		19		20		14	
Dilution Factor:	1		1		1			1		1		1		1	
Level:	LOW		LOW		LOW			LOW		LOW		FCM		LOW	
Number of TIC's:	35		33		28			21		35		26		35	

Note:

Case No.: 25159

SDG:

FFG02

Reviewer:

M. Missler

Laboratory: AATS

Matrix:

SOLL

Units:

ug/Kg

SEMIVOLATILES		FLAG	_FLAG		FLA	.G_		FLAC	;	_FLA	G		_FL	AG		FLA	<u>.</u> G
EPA SAMPLE NUMBER:	PF-G14	FF-G15	FF-G1	L5RE			FF-G16		FF-G16RE		1	FF-G17		FF-GI	L7RE		
Phenol !	400	ប្ 380	U	380	σ	*	430	σ	430	U	*	400	U	*	400	U	
bis(2-Chloroethyl)ether	400	ប 380	U	380	U	*	430	Ū	430		*			*	400		
2-Chlorophenol	400	U 3B0	ប	380	U	*	430	U	430	Ū	*	400	U	*	400	U	
1,3-Dichlorobenzene	400			380		*	430		430		*	400		*	400		
1,4-Dichlorobenzene	400			380		*	430		430	-	*		Ū	*	400		
1,2-Dichlorobenzene	400	U 380	U	380	U	*	430	U	430	u	*	400	U	*	400	u	
2-Methylphenol	400			380		*		J	57		*	400	-	*	400	-	
2,2'-Oxybis(1-chloropropane)	400				_	*	430		430		*	400 400	_	*	400 400		
4-Methylphenol	400	ປ 380	U	380	u	*	94	u	100		-	400	u	-	400		
N-Nitroso-di-n-propylamine	400			380	-	*	430		430		*		U	*	400	_	
Hexachlorcethane	400		-	380		*	430		430		*	400	U	*	400	-	
Nitrobenzene	400	υ 380	U	380	U	*	430	u	430	Ū	•	400	U	*	400	U	
Isophorone	400	ប 380	U	380	-	*	430		430		*		U	*	400		
2-Nitrophenol	400			380		*	430		430	-	*	400	Ū	*	400		
2,4-Dimethylphenol	400	T 380	U	380	Ū	*	360	J	380		•	400	U	*	400	U	
bis(2-Chloroethoxy)methane	400	ປ 380	U	380	σ	*	430	ប	430		*			*	400		
2,4-Dichlorophenol	400			380		*	430		430		*	400		*	400		
1,2,4-Trichlorobenzene	400	Ü 380	U	380	U	*	430	Ü	430	U	*	400	Ü	*	400	U	
Naphthalene [400	U 81	J	380	U	*	430		430	-	*	400		*	400		
4-Chloroaniline	400	•		380		*	430		430		*	400		*	400		
Hexachlorcbutadiene	400	Ū 380	U	380	σ	*	430	U	430	σ	*	400	U	*	400	U	
4-Chloro-3-methylphenol	400	U 380	U	380	U	*	430		430	σ	*	400		*	400		
2-Methylnaphthalene	400		J	180		*	430		430	_	*	400		*	400		
Hexachlorocyclopentadiene	400	T 380	U	380	Ŭ	*	430	U	430	Ū	*	400	U		400	U	•
2,4,6-Trichlorophenol	400	ប 380	σ	380		*	430		430		*	400			400		*
2,4,5-Trichlorophenol	1000			950		*	1100		1100		*	1000			1000		*
2-Chloronaphthalene	400	T 380	U	380	U	*	430	U	430	U	*	400	U		400	u	*
2-Nitroaniline	1000	U 950	σ	950		*	1100		1100	_	•	1000		;	1000		•
Dimethylphthalate	400				_	*	430		430	•	*	400			400		*
Acenaphthylene	400	U 380	U	380	Ū	*	430	U	430	u	*	400	u		400	U	•
2,6-Dinitrotoluene	400			380		*	430		430		*	400			400		*
3-Nitroaniline	1000				-	*	1100		1100 430		*	1000			1000 400		
Acenaphthene	400	Ω 380	U	380	Ū	*	430	U	430	U	*	400	U		400	U	-
2,4-Dinitrophenol	1000	σ 950	U	950	ũ	*	1100	U	1100	U	*	1000	σ		1000		*
4-Nitrophenol	1000	τ 950	σ	950	U	*	1100	U	1100	Ū	*	1000	U		1000	Ü	*
Dibenzofuran	400	Ω 380	U	380	Ū	*	430	ū	430	U	*	400	U		400	U	*
2,4-Dinitrotoluene	400	U 380	U	380	U	*	430	Ū	430	ט		400	σ		400	σ	*
Diethylphthalate	400	ປ 380	ប	380	U	*	430	σ		U			U			Ū	
4-Chlorophenyl-phenylether	400	T 380	σ	380	U	*	430	Ū	430	σ	*	400	ס פ		400	U	*
Fluoren e	400	ប 380	σ	380	U	*	430	σ		Ū		400	ס נ			U	
4-Nitroanıline	1000	. U 950	U	950			1100		1100			1000			1000		
4.6-Dinitro-2-methylphenol	1000	υ 950	UJv	950	U	*	1100	₩	1100	ט פ	*	1000) U		1000	Ū	•
N-Nitrosodiphenylamine	400	υ 380	UJv	380	U	*		ÜJv		ប			v			ט נ	
4-Bromophenyl-phenylether	400	_	₩	380				UJν		υ (ם נ			U	
Hexachlorobenzene	400	Ω 380	UJV	380	Ū	*	430	UJv	430	U	*	400	ט ס		400	Ţ	*
Pentachlorophenol	 1000	σ 950	₩v	950	U	*		บบง				1,000			1000		
Phenanthrene	400	-	J	820		*		บบ		U (0 0			ט נ	
Anthracene	400	Ω 380	UJv	380	U	*	430	UJV	430	ט כ	*	40	0 0		400) U	*

Case No.: 25159

SDG:

FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix:

SOIL

Units:

ug/Kg

SEMIVOLATILES	I	_PLAG	_FLAG		_FL	4G_		FLA	G1	FLAG_		_FLA	G	FL	AG
EPA SAMPLE NUMBER:	 FF-G14 !	FF-G15	. 1	FF-315RE			FF-G16		FF-G16RE		FF-G17		FF-G17RE		
Carbazole	 400	u 380	UJv	380	Ū	*	430	UJv	430 T	y +	400	ប	400	U	*
Di-n-butylphthalate	400	U 380	IJv	57		*	430	UJv		•	400	U	400	Ü	*
Fluoranthene	400	σ 380	IJv	110		*	430	IJν	430 () +	400	U	400	U	*
Pyrene	400	บ 560	J	590		*	430	IJv	430 T	J *	25	J	400	U	*
Butylbenzylphthalate	[400	ប 380	IJŢV	380	U	-	100	J	430 t		53	J	56		*
3.3'-Dichlorobenzidine	400	U 380	UJV	380	U	•	430	IJν	430 (7 *	400	UJv	400	U	*
Benzo (a) anthracene	400	U 300	J	280		•	90	J	430 0	, •	400	υJν	400	U	*
Chrysene	400	U 690	J	670		*	430	IJν	110	*	41	J	40		*
bis(2-Ethylhexyl)phthalate	400	U 380	ŪĴν	380	Ū	*	430	VŨV	430 T	J *	400	UJV	62		*
Di-n-octylphthalate	 400	U 380	υĮν	380	U	*	27	J	430 (J *	400	UJv	400		*
Benzo(b) fluoranthene	400			210		*	430	UJ∨	430 U	J *	400	IJν	400	U	*
Benzo(k)fluoranthene	400	U 380	Ūν	58		*	430	UJv	430 U	, *	400	IJν	400	U	*
Benzo(a)pyrene	400	ບ 250	J	240		*	150	J	160	*	400	IJν	400	U	*
Indeno(1,2,3-cd)pyrene	400	U 380	UJν	380	U	*	430	IJν	430 T		400	IJν	400	U	*
Dibenz (a, h) anthracene	400	Ω 380	IJν	380	U	*	430	UJv	430 C	, *	400	ŪĴν	400	U	*
Benzo(g,h,i)perylene	400	U 440	J	380	σ	*	430	₩v	430 T	; *	400	Wv	400	U	*
Sample wt (g):	30	30		30			30		30		30		30		
%Moisture:	18	13		13			24		24		18		18		
Dilution Factor:	1	1		1			1		1		1		1		
Level:	FOM	LOW		LOW			LOW		LOW		LOW		LOW		
Number of TIC's:	22	35		35			35		35		2°		22		

Case No.: 25159

SDG:

FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix:

SOIL

Units:

ug/Kg

semivolatiles	l	FLAG		_FLAC	;	_FL	AG		_FLA	G	_FLA	G	_FL	AG_		FLAG
EPA SAMPLE NUMBER:	FF-G18		FF-G18RE		FF-G21		:	FF-G21RE		FF-G22		FF-G22RE			FF-G23	
Phenol	400	บ *	400	U	400	ਧ		400	σ	400	Ü	400	υ	•	400	U
bis(2-Chloroethyl)ether	400		400	Ū	400	U	*	400	U	400	IJ	400	U	*	400	Ū
2-Chlorophenol	400		400	U	400	Ū	*	400	U	400	U	400	U	*	400	Ü
1,3-Dichlorobenzene	400	υ *	400	U	400	U	*	400	U	400	U	400	Ū	*	400	α
1,4-Dichlorobenzene	400	υ *	400	U	400	U	*	400	U	400	Ū	400		*	400	σ
1,2-Dichlorobenzene	400	α *	400	U	400	Ū	*	400	Ū	400	Ū	400	Ū	*	400	σ
2-Methylphenol	400			-	400		*	400		400	-	400		*	400	
2,2'-Oxybis(1-chloropropane)	400	_			400		*	400		400		400		*	400	-
4-Methylphenol	400	U *	400	U	400	Ū	*	400	U	400	U	400	u	*	400	u
N-Nitroso-di-n-propylamine	40:	-			400	-	•	400	-	400		400		*	400	
Hexachloroethane	400				400		*	400		400		400 400		*	400 400	
Nitrobenzene	400	U *	400	U	400	U	*	400	u	400	u	400	Ų	•	400	U
Isophorone	400			_	400	-	*	400		400		400		*	400	
2-Nitrophenol	400	U *			400	-	*	400		400			_	*	400	
2,4-Dimethylphenol	400	IJ +	400	Ų	400	U	*	400	U	400	U	400	U	*	400	Ū
bis(2-Chloroethoxy)methane	400	ប *	400	υ	400	U	*	400	U	400		400	-	*	400	
2,4-Dichlorophenol	400	ប *			400		*	400		400		400		*	400	
1,2,4-Trichlorobenzene	400	U *	400	σ	400	U	*	400	U	400	U	400	U	*	400	U
Naphthalene	400	บ *	400	σ	400	U	*	400	U	400	U	400	ŭ	*	400	U
4-Chloroaniline	400	ប *	400	ប	400	$\boldsymbol{\sigma}$	•	400		400	-	400		*	400	
Hexachlorobutadiene	400	σ •	400	U	400	U	*	400	U	400	u	400	U	•	400	U
4-Chloro-3-methylphenol	400	U *	400	U	400	U	*	400	Ū	400	U	400	σ	•	400	Ū
2-Methylnaphthalene	400	ਹ *	400	U	400	U	*	400		400		400		*	400	
Hexachlorocyclopentadiene	400	U	400	υ .	400	U		400	U	* 400	ប	400	Ū	*	400	U
2,4,6-Trichlorophenol	400	ប	400	U 1	400	U			_	* 400		400		*	400	-
2,4,5-Trichlorophenol	1000	ਹ	1000					1000		* 1000		1000		#	1000	
2-Chloronaphthalene	400	U	400	υ ,	400	U		400	U	* 400	U	400	Ü	*	400	Ū
2-Nitroaniline	1000	Ū	1000	Ū ·	1000	σ		1000	-	* 1000		1000			1000	
Dimethylphthalate	400	U	400	Ū,				400	-	* 400		400		*	400	
Acenaphthylene	400	U	400	Ū	400	U		400	U	* 400	Ū	400	u	•	400	U
2,6-Dinitrotoluene	400		400			_		400		± 400		400		*	400	-
3-Nitroaniline	1000		1000					1000		* 1000	-	1000		*	1000	
Acenaphthene	400	U	400	י ע	400	u		400	u	* 400	U	400	U	•	400	u
2,4-Dinitrophenol	1000	Ū	1000	υ ,	1000	σ		1000	Œ	* 1000	U	1000	Ū	*	1000	U
4-Nitrophenol	1000	บ	1000	U ·	1000	U		1000	U	* 1000	ט ו	1000	U	*	1000	U
Dibenzofuran	400	U	400	Q '	400	U		400	U	* 400	U	400	U	*	400	α
2,4-Dinitrotoluene	400	U	400	U ·	400	υ			U			400			400	_
Diethylphthalate	400	ũ	400	U	• 400	ប		400	U			400			400	
4-Chlorophenyl-phenylether	400	Ū	400	Ū	400	U		400	U	+ 400	U	400	U	*	400	U
Fluorene	400	U	400	ט	* 400	U			σ		ט כ	400			400	
4-Nitroaniline	1000	σ	1000	ŭ				1000				1000			1000	
4,6-Dinitro-2-methylphenol	1000	U	1000	U	* 1000	υ 0		1000	Ū	* 1000	ינט נ	r 1000	υ (*	1000	ט ו
N-Nitrosodiphenylamine	 400	σ	400	U	* 40	u c		400	υ	+ 400	O UJV				400	
4-Bromophenyl-phenylether	400	U	400	U	4 40	ס כ		400	U		O COL					U
Hexachlorohenzene	400	ប	400	U	* 40	U		400	U	± 400	່ວ	r 400	U	*	400	U
Pentachlorophenol	1000	U	1000	σ	* 100·	ט ס		1000	σ	* 100	יטט נ	v 1000	U	*	1000	υ
Phenanthrene	400		400	U	* 40	υo		400	U	* 40	יעט פ			•		5 J
Anthracene	400	U	400	U	* 40	U		400	U	* 40	ינט ס	400	U	*	400	3 U

Case No.: 25159

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SDG:

FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix:

SOIL

Units:

ug/Kg

SEMIVOLATILES	!	_FLAC	3	_FI	AG_		_FLAC	3	FI	AG		_FLA	3	FL/	AG_		_FLAG
EPA SAMPLE NUMBER:	 FF-G18		FF-G18RE			FF-G21		FF-G21RE			FF-G22		FF-G22RE			FF-G23	
Carbazole	400	ប	400	Ū	*	400	U	400	υ	*	400	IJν	400	U	*	400	Ū
Di-n-butylphthalate	400	U	400	U	*	30	J	27		*	400	UJv	400	Ū	*	400	U
Fluoranthene	400	Ū	400	Ū	*	400	IJ	400	Ū	*	400	ÜJv	400	U	*	400	U
Pyrene	 38	J	400	U	*	26	J	400	U	*	400	UJv	400	U	*	94	J
Butylbenzylphthalate	45	J	51		*	35	J	400	U	*	400	UJν	400	U	*	59	J
3,3'-Dichlorobenzidine	400	IJν	400	U	*	400	IJν	400	σ	*	400	ŰĴν	400	Ū	*	400	IJν
Benzo (a) anthracene	400	UJv	400	U	*	400	Ūΰν	400	σ	*	400	UJv	400	tr	*	400	ijΙν
Chrysene	26	J	26		*	22	J	400	U	*	400	UJv	400	Ū	*	82	J
bis(2-Ethylhexyl)phthalate	400	UJν	83		*	400	ŲΪV	87		*	400	IJν	400	U	*	400	UJv
Di-n-octylphthalate	400	IJν	400	σ	*	400	UJv	400	U	*	400	UJv	400	U		400	IJv
Benzo (b) fluoranthene	400	Ūΰν	400	U	*	400	IJν	400	U	*	400	ŪJv	400	U	*	31	J
Benzo(k)fluoranthene	400	UJv	400	ָ ט	*	400	ŪĴΨ	400	U	*	400	IJv	400	U	*	26	J
Benzo(a)pyrene	400	UJv	400	σ	*	400	IJν	400	U	*	400	IJν	400	U	*	54	J
Indeno(1,2,3-cd)pyrene	400	IJν	400	U	*	400	IJv	400	U	*	400	UJv	400	บ	*	51	J
Dibenz(a,h)anthracene	400	ŪĴν	400	U	*	400	VÜV	400	U	*	400	บีวัง	400	Ū	*	26	J
Benzo(g,h,i)perylene	400	IJν	400	Ū	*	400	ŪJv	400	Ū	•	400	υĴν	400	σ	*	190	J
Sample wt (g):	30		30			30		30			30		30			30	
₹Moisture:	18		18			18		18			18		18			18	
Dilution Factor: [1		ı			1		1			1		1			1	
Level:	TOM		LCW			LOW		LOW			TOM		LOW			LOW	
Number of TIC's:	25		17			27		19			31		26			26	

Case No.: 25159

SDG:

FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units:

ug/Kg

SEMIVOLATILES	FLAG	FLAG	flag	FLAG	PLAG	flag	FLAG
EPA SAMPLE NUMBER:	{ FF-G23RE						
Phenol	! 400 U *						
bis(2-Chloroethyl)ether	400 U *						
2-Chlorophenol	400 U +						
1,3-Dichlorobenzene	400 G *						
1,4-Dichlorobenzene	[400 U +						
1,2-Dichlorobenzene	400 U * 						
2-Methylphenol	* U 002	-					
2,2'-0xybis(1-chloropropane)			-			-	
4-Methylphenol	400 U *						
N-Nitroso-di-n-propylamine	400 U *						
Hexachloroethane	400 ti +						
Nitrobenzene	[400 Ū *						
Isophorone	1 400 U *						
2-Nitrophenol	400 U *						
2,4-Dimethylphenol	[400 Ŭ *						
bis (2-Chloroethoxy) methane	400 U *						
2,4-Dichlorophenol	400 U *						
1,2,4-Trichlorobenzene	400 U * 						
Naphthalene	400 U *						_
4-Chloroaniline	400 U *						
Hexachlorobutadiene	400 U *						
4-Chloro-3-methylphenol	400 U *						
2-Methylnaphthalene	400 U *						
Hexachlorocyclopentadiene	1 400 U *						
2,4,6-Trichlorophenol	400 U *						
2,4,5-Trichlorophenol	1000 U *						
2-Chloronaphthalene	400 U *						
2-Nitroaniline	1000 U *						
Dimethylphthalate	400 Ü *						
Acenaphthylene	400 0 *						
2,6-Dinitrotoluene	400 U *						
3-Nitroaniline) 1000 a +						
Acenaphthene	400 U *						
2,4-Dinitrophenol	1000 0 *						
4-Nitrophenol	1000 U *						
Dibenzofuran	\ 400 U *						
2,4-Dinitrotoluene	400 U •						
Diethylphthalate	400 0 *						
4-Chlorophenyl-phenylether	400 0 *			•			
Fluorene	400 U *						
4-Nitroaniline	1000.U *						
4,6-Dinitro-2-methylphenol	1000 U *						
N-Nitrosodiphenylamine	400 U *						
4-Bromophenyl-phenylether	400 U *						
Hexachlorobenzene	400 U *						
Pentachlorophenol	1000 0 +						
Phenanthrene	35 *						
Anthracene	400 U *						

Case No.: 25159

SDG:

FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix:

SOIL

Units:

ug/Kg

SEMIVOLATILES	.[FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G23RE						
Carbazole	 400 U *						
Di-n-butylphthalare	26 *						
Fluoranthene	23 *						
Pyrene	90 *						
Butylbenzylphthalace	} B1 *						
3,3'-Dichlorobenzidine	400 U *						
Benzo(a)anthracene	400 U *						
Chrysene	į 77 *						
bis(2-Ethylhexyl)phthalate	79 *						
Di-n-octylphthalate	400 U *						
Benzo(b) fluoranthene	35 *						
Benzo(k) fluoranthene	41 *						
Benzo(a)pyrene	60 *						
Indeno(1,2,3-cd)pyrene	29 *						
Dibenz(a,h)anthracene	400 U *						
Benzo(g,h,i)perylene	110 +						
Sample wt (g):	30						
%Moisture:	18						
Dilution Factor:	1						
Level:	LOW						
Number of TIC's:	35						

Case No.: 25159

SDG:

FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix:

SOIL

Units:

ug/Kg

PESTICIDES/PCBs	PLAC	F	PLAG	FLAG	FLAG_	FLA	GFLAC	FLAG
EPA SAMPLE NUMBER:	FF-G02	FF-G03	FF-G04	FF-G0	5	FF-G06	FF-G07	FF-G08
alpha-BHC	2.1 0	2.0 0	7 2.2	U 2.	ı U	2.2 Ü	2.3 U	2.2 U
beta-BHC	2.1 U	2.0 0	1 2.2	ຫ 2.	ıU	2.2 U	2.3 U	2.2 U
delta-BHC	2.1 U	2.0 0	-	υ 2.	ı U	2.2 ប	2.3 U	2.2 บ
gamma-BHC (lindane)	2.1 U	2.0 0	J 2.2	υ 2.	ıU	2.2 ΰ	2.3 U	2.2 ℧
Heptachlor	2.1 U	2.0 0	7 2.2	υ 2.	1 U	2.2 U	2.3 U	2.2 U
Aldrin	2.1 0	2.0 0	2.2	υ 2.	1 U	2.2 U	2.3 Ŭ	2.2 0
Heptachlor epoxide	2.1 ប	2.0 0		-	1 U	2.2 ℧	2.3 U	2.2 Ŭ
Endosulfan I	2.1 U	2.0 🛡			1 0	2.2 U	2.3 U	2.2 U
Dieldrin	4.0 ਹ	3.9 U	4.2	ປ 4.	ı U	4.2 U	4.4 U	4.3 U
4,4'-DDE	4. ^ U	3.9 U			ı U	4.2 U	4.4 U	4.3 U
Endrin	4.0 U	3.9 ប			1 0	4.2 U	4.4 U	4.3 U
Endosulfan II	4.0 U	3.9 0	1 4.2	U 4.	1 U	4.2 U	4.4 U	4.3 U
4.4'-DDD	4.0 U	3.9 U			ı U	4.2 U	4.4 U	4.3 U
Endosulfan sulfate	4.0 U	3.9 U		-	ιU	4.2 U	4.4 U	4.3 Ū
4,4'-DDT	4.0 U	3.9 U	4.2	U . 4.	1 U	4.2 U	4.4 U	4.3 U
Methoxychlor	21 U	20 0		-	r n	22 U	23 U	22 U
Endrin ketone	4.0 U	3.9 U			1 U	4.2 U	4.4 U	4.3 U
Endrin aldehyde	4.0 U	3.9 Մ	4.2	U 4.:	ו ס	4.2 U	4.4 U	4.3 U
alpha-Chlordane	2.1 Ŭ	2.0 U			l U	2.2 T	2.3 U	2.2 U
gamma-Chlordane į	2.1 U	2.0 U			ισ	2.2 T	2.3 U	2.2 U
Toxaphene	210 U	200 ប	220	Ū 21	0 U	220 U	230 U	220 U
Aroclor-1016	40 U	39 Ծ			1 U	42 U	44 U	43 Ü
Aroclor-1221 [82 U	80 0		-	3 U	86 U	89 T	87 U
Aroclor-1232	40 U	39 T	1 42	Ū 4.	ı U	42 U	44 U	43 U
Aroclor-1242	40 U	39 U		-	1 U	42 U	44 U	43 U
Aroclor-1248 [40 U	39 U	42	U 4	l U	42 U	44 U	43 U
Aroclor-1254	40 U	39 U	1 42	Ű 4.	ισ	42 U	44 U	43 Ū
Aroclor-1260	40 U	39 U	42	Ū 4	1 0	42 U	44 U	43 U
 Sample wt (g): 	30	30	30	3	0	30	30	30
łMoisture:	18	16	21	1	9	22	25	23
Dilution Factor: 	1	1	1		1	1	1	1

Case No.: 25159

SDG:

FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix:

SOIL

Units:

ug/Kg

PESTICIDES/PCBs	FLA	GFI	AGFL	AGFLAC	FLAC	FLA	GFLAG
EPA SAMPLE NUMBER:	FF-G09	FF-G10	FF-G11	FF-G12	FF-G13	FF-G14	FF-G15
alpha-BHC	2.4 U	2.1 U	2.1 ŋ	2.1 U	2.0 U	2.1 σ	2.0 U
beta-BEC	2.4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 U	2.0 U
delta-BRC	2.4 U	2.1 T	2.1 ប	2.1 ប	2.0 0	2.1 0	2.0 U
gamma-BHC (lindane)	2.4 U	2.1 U	2.1 Ծ	2.1 U	2.0 U	2.1 U	2.0 Ψ
Heptachlor	2.4 U	2.1 0	2.1 U	2.1 0	2.0 0	2.5	2.0 U
Aldrin	2.4 U	2.1 U	2.1 ប	2.1 Ū	2.0 U	2.1 U	2.0 ប
Heptachlor epoxide	2.4 Ü	2.1 U	2.1 ប	2.1 ប	2.0 U	2.1 ប	2.0 U
Endosulfan I	2.4 U	2.1 σ	2.1 U	2.1 U	2.0 0	2.1 0	2.0 U
Dieldrin	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	3.8 U
4,4'-DDE	4.6 U	4.0 U	4.1 U	4.1 U	3.8 T	4.0 U	3.8 U
Endrin	4.6 U	4.0 U	4.1 U	4.1 U	3.8 Ū	4.0 U	7.5 J
Endosulfan II	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	7.9
4,4'-DDD	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	3.8 U
Endosulfan sulfate	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	10 M
4,4'-DDT	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	3.8 Ū
Methoxychlor	24 U	21 U	21 T	21 U	20 U	21 U	20 U
Endrin ketone	4.6 U	4.0 U	4.1 U	4_1 U	3.8 0	4.0 Ü	14 J
Endrin aldehyde	4.6 U	4.0 U	4.1 U	4.7 U	3.8 U	4.0 U	3.8 U
alpha-Chlordane	2.4 U	2.1 0	2.1 U	2.1 U	2.0 U	2.1 0	3.6 J
gamma-Chlordane	2.4 U	2.1 ប	2.1 0	2.1 U	2.0 ℧	2.1 U	5.7
Toxaphene	240 U	210 0	210 T	210 U	200 U	210 0	200 T
Aroclor-1016	46 U	40 U	41 U	41 U	36 U	40 U	38 U
Aroclor-1221	94 U	82 U	83 U	84 U	78 U	82 U	77 0
Aroclor-1232	46 U	40 U	41 Ü	41 U	38 U	40 U	38 U
Aroclor-1242	46 U	40 U	41 U	41 U	38 0	40 0	38 0
Aroclor-1248	46 U	40 U	41 0	41 U	38 U	40 U	38 U
Aroclor~1254	46 U	40 U	41 U	41 Ü	38 T	40 U	38 U
Aroclor-1260	46 U	40 U	41 U	41 U	38 U	40 U	38 U
Sample wt (g):	30	30	30	30	30	30	30
¥Moisture: }	29	18	19	20	14	18	13
Dilution Factor:	1	1	1	1	1	1	1

Case No.: 25159

SDG:

FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix:

SOIL

Units:

ug/Kg

### SAMPLE NUMBER: FF-G16 FF-G17 FF-G18 FF-G21 FF-G22 FF-G23 ### Sample NUMBER: SP-G16 SP-G17 SP-G18 FF-G21 FF-G22 SP-G23 ### Sample NUMBER: Sp-G16 Sp-G17 Sp-G18 Sp-G21 Sp-G22 Sp-G23 ### Sample NUMBER: Sp-G16 Sp-G17 Sp-G18 Sp-G21 Sp-G22 Sp-G23 ### Sample NUMBER: Sp-G16 Sp-G17 Sp-G18 Sp-G21 Sp-G22 Sp-G23 ### Sample NUMBER: Sp-G16 Sp-G21 Sp-G21 Sp-G22 Sp-G22 ### Sample NUMBER: Sp-G21 Sp-G21 Sp-G21 Sp-G22 Sp-	PESTICIDES/PCBs	FLAG	FLAG	FLAG	FLAG	jflag_	FLAG	FLAG
Deta-BHC 2.2 U 2.1 U 2	EPA SAMPLE NUMBER:	PF-G16	FF-G17	FF-G18	FF-G21	FF-G22	FF-G23	
Deta-BHC 2.2 U 2.1 U 2	alpha-BHC	2.2 U	2.1 0	2.1 U	2.1 U	2.1 U	2.1 U	
delta-BHC 2.2 U	beta-BHC	2.2 ប	2.1 0	2.1 U	2.1 Ü	2.1 U	2.1 U	
Reptachlor 2.2 U	delta-BHC	2.2 ប	2.1 ប		2.1 U	2.1 U	2.1 U	
Aldrin 2.2 0 2.1 0 2.1 0 2.1 0 2.1 0 2.1 0 2.1 0 2.1 0 2.1 0 4.0 0	gamma-BHC (lindane)	2:2 ប	2.1 ប	2.1 U	2.1 U	2.1 Ū	2.1 ប	
Heptachlor epoxide Endosulfan I 2.2 U 2.1 U 4.0	- ,	2.2 🗸	2.1 U	2.1 σ	2.1 0	2.1 U	2.1 U	
Sample wt (g): 30 30 30 30 30 30 30 3	Aldrin	2.2 Մ	2.1 0	2.1 Ű	2.1 U	2.1 U	2.1 U	
Dieldrin				2.9				
A,4'-DDE								
Endrin	Dieldrin	4.3 U	4.0 Ü	4.0 σ	4.0 ប	4.0 U	4.0 ℧	
Endosulfan II	- I						-	
### At a color-1015 ### Aroclor-1221 ### Aroclor-1232 ### Aroclor-1242 ### Aroclor-1254 ### Aroclor-1254 ### Aroclor-1256 ### Aroclor-1256 ### Aroclor-1256 ### Aroclor-1256 ### Aroclor-1256 ### Aroclor-1260 #### Aroclor-1260 #### Aroclor-1260 #### Aroclor-1260 ##### Aroclor-1260 ##### Aroclor-1260 ###### Aroclor-1260 ###### Aroclor-1260 ####################################								
Endosulfan sulfate 4.3 U 4.0 U 4.0 U 4.0 U 4.0 U 4.0 U 4.0 U 4.0 U 4.4 U 4.0 U 4.0 U 4.0 U 4.0 U 4.0 U 4.0 U Methoxychlor Endrin ketone 1.3 U 4.0 U 4.0 U 4.0 U 4.0 U 4.0 U 4.0 U 4.0 U Endrin ketone 1.3 U 4.0 U 4.0 U 4.0 U 4.0 U 4.0 U 4.0 U Endrin aldehyde 1.3 U 4.0 U 4.0 U 4.0 U 4.0 U 4.0 U 4.0 U Alpha-Chlordane 2.2 U 2.2 U 3.6 U 5.9 B 2.1 U 2.1 U 2.1 U Downan-Chlordane 2.2 U 2.8 UU 5.9 B 2.1 U 2.1 U 2.1 U Aroclor-1016 43 U 40 U 40 U 40 U 40 U 40 U 40 U 40 U Aroclor-1221 88 U 82 U 82 U 82 U 82 U 82 U 82 U Aroclor-1232 43 U 40 U 40 U 40 U 40 U 40 U 40 U 40 U Aroclor-1242 43 U 40 U 40 U 40 U 40 U 40 U 40 U 40 U Aroclor-1242 43 U 40 U 40 U 40 U 40 U 40 U 40 U 40 U Aroclor-1254 43 U 40 U 40 U 40 U 40 U 40 U 40 U Aroclor-1254 43 U 40 U 40 U 40 U 40 U 40 U 40 U Aroclor-1254 43 U 40 U 40 U 40 U 40 U 40 U 40 U Aroclor-1260 43 U 40 U 40 U 40 U 40 U 40 U 40 U Aroclor-1260 43 U 40 U 40 U 40 U 40 U 40 U 40 U Aroclor-1260 43 U 40 U 40 U 40 U 40 U 40 U 40 U Aroclor-1260 43 U 40 U 40 U 40 U 40 U 40 U 40 U Aroclor-1260 43 U 40 U 40 U 40 U 40 U 40 U 40 U Aroclor-1260 43 U 40 U 40 U 40 U 40 U 40 U 40 U Aroclor-1260 43 U 40 U 40 U 40 U 40 U 40 U 40 U Aroclor-1260 43 U 40 U 40 U 40 U 40 U 40 U 40 U Aroclor-1260 43 U 40 U 40 U 40 U 40 U 40 U 40 U Aroclor-1260 43 U 40 U 40 U 40 U 40 U 40 U 40 U Aroclor-1260	Endosulfan II	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 Ü	
### A.4'-DDT 4.3 U	•							
Methoxychlor	· •							
Endrin ketone	4,4'-DDT	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	-
Endrin aldehyde	- ,							
alpha-Chlordane 2.2 U 2.2 J 3.6 J 2.1 U 2.1 U 2.1 U 2.1 U gauma-Chlordane 2.2 U 2.8 UJ 5.9 B 2.1 U 2.1 U 2.1 U 2.1 U Toxaphene 220 U 210 U <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>								
Sample wt (g): 30 30 30 30 30 30 30 3	Endrin aldehyde [4.3 U	4.0 U	4.0 U	4.0 Ü	4.0 U	4.0 U	
Toxaphene 220 U 21	- .							
Aroclor-1016 Aroclor-1221 88 U 82 U 82 U 82 U 82 U 82 U 82 U 82 U	3							
Aroclor-1221	Toxaphene	220 U	210 U	210 U	210 U	210 U	210 U	
Aroclor-1232	,						•	
Aroclor-1242								
Aroclor-1248	Aroclor-1232 [43 U	40 U	40 U	40 U	40 U	40 U	
Aroclor-1254 43 U 40 U 40 U 40 U 40 U 40 U 40 U 40 U								
Aroclor-1260								
Sample wt (g): 30 30 30 30 30 30 30 30 30 30 30 30 30	Aroclor-1254	43 U	40 U	40 Ü	40 U	40 T	40 U	
*Moisture: 24 18 18 18 18 18	Aroclor-1260	43 U	40 U	40 U	40 U	40 U	40 U	
į .	Sample wt (g):	30	30	30	30	30	30	
Dilution Factor: 1 1 1 1 1 1 1	*Moisture:	24	18 .	18	18	18	18	
	Dilution Factor:	1	1	1	1	1 .	1	

INORGANIC/ORGANIC COMPLETE SDG FILE (CSF) INVENTORY CHECKLIST

Case No.	25159 SDG No. FFG02 SDG Nos. To Follo	ow SAS No.	Date I	Rec _	2/27/96
EPA La	b ID: AATS	ORIGINALS	YES	NO	N/A
Lab Loc	cation: Broken Arrow, OK 74012	CUSTODY SEALS			
Region:	6 Audit No.: 25159/FFG02	I. Present on package?	х	<u> </u>	
Re_Sub	mitted CSF? Yes No X	2. Intact upon receipt?	x		
Box No	(s): 1	FORM DC-2			
COMM	ENTS:	Numbering scheme accurate?		X	
_	<u></u>	4. Are enclosed documents listed?	х		
3	The reviewer clarified the numbering scheme as follows: SDG parative was pages 1-35B:	5. Are listed documents enclosed?	X		
	SDG narrative was pages 1-35B; SDG cover sheet/TR were pages 35C-38;	FORM DC-1			
	Forms VIII VOA were pages 362-367; and VOA standards data were pages 178-361.	6. Present?	x		
13	No airbills were available as the samples were delivered in	7. Complete?	X		\top
15	person.	8. Accurate?	Х	1	
	•	CHAIN-OF-CUSTODY RECORD(s)			
		9. Signed?	х		
		10. Dated?	Х	 	\top
		TRAFFIC REPORT(s) PACKING LIST(s)			
		11. Signed?	х		
		12. Dated?	X		
		AIRBILLS/AIRBILL STICKER			1
		13. Present?			x
		14. Signed?	T		x
		15. Dated?			X
		SAMPLE TAGS			
		16. Does DC-1 list tags as being included?	х	1	· I
		17. Present?	х		
		OTHER DOCUMENTS			
		18. Complete?	Х	}	I
		19. Legible?	Х		
		20. Original?		x	
Over for	additional comments.	20a.If "NO", does the copy indicate where original documents are located?	x		
Audited l	7010 101 109 557 01	Maria Missler / ESAT Data Reviewer	Date		97
Audited l			•		
Audited l			Date		
	Signature .	Printed Name/Title			
	-	MPLETED BY CEAT			
Date !	Recvd by CEAT:	Date Entered: Date Reviewed	l:		
	Entered by:				
	Reviewed by:				
	Signature	Printed Name/Title			
	· · · · · · · · · · · · · · · · · · ·				

Page 1 of 2

In Reference to Case No(s):
25159 SDG: FFG02 (0-1780)

Contract Laboratory Program REGIONAL/LABORATORY COMMUNICATION SYSTEM FAX Record Log

	Date of Laborate	FAX: ory Name:	January 10. 1997 AATS	
	Lab Cont	act:	Harry Borg	
	Region: Regional	. Contact:	6 <u>Maria Missler - ESAT</u>	
	FAX init	iated by:	Laboratory <u>X</u> Re	gion
In	reference	to data for	the following fractions:	
	BNA	Pest/PCB		

Summary of Questions/Issues:

A. BNA

- 1. Sample FF-G11, Form I SV-TIC: The TIC's at 22.326 and 22.595 min. were assigned the same CAS number and compound name. Please revise and resubmit this form.
- 2. Sample FF-G17RE, Form I SV-TIC: The TIC's at 12.764 and 13.089 min. were assigned the same CAS number and compound name. Please revise and resubmit this form.
- 3. Sample FF-G16: On the quantitation report, the peak identified as benzo(a) anthracene better matches the retention time identification criteria for chrysene. Please correct and resubmit the quantitation and results reports.
- 4. The following peaks appear to meet the TIC intensity criteria but were not reported. Please revise Forms I SV-TIC to include these peaks or explain:

<u>Sample</u>	Approximate peak RT (min)
FF-G03	11.4, 12.0
FF-G04	4.95, 11.7, 12.2
FF-G07	4.4
FF-G10	7.6

5. Form V SV, page 464: According to the analysis log (page 2682), the sample analyzed on 12/12/96 at 0029 was identified as "FF-G01", not FF-G06 as reported on this form. Please clarify this discrepancy.

FAX COMMUNICATION LOG

Continuation Page Laboratory/Contact AATS / Harry Borg In Reference To Case No. 25159 SDG: FFG02

B. Pest/PCB

- 1. Forms VI PEST-2, pages 2327, 2328, 2329, and 2330: The reviewer was unable to reproduce the calibration factors reported for the two surrogates based on the raw data (pages 2396-2409 and 2449-2462). Please correct and resubmit these forms to match the raw data or demonstrate your calculations.
- 2. Method blank PBLKSC, page 2490: According to the SOW (OLM03.0, D-73/PEST, 12.1.2.4) the method blank acceptance criteria apply independently to each analytical column. integration report (page 2490) shows the presence of endosulfan sulfate on column DB-17 above the CRQL. Please comment on this non-compliance.

Any laboratory resubmission should be submitted either as an addendum to the original CSF with a revised Form DC-2 or submitted as a new CSF with a new Form DC-2 (OLM03.0, p. B-29), except those containing only replacement pages. Custody seals are required for all CSF resubmission shipments.

Please respond to the above items. Region 6 resubmissions may be included with CCS response or sent separately within 7 days to:

> Mr. Mahmoud El-Feky U.S. EPA Region 6 Laboratory 10625 Fallstone Road Houston, TX 77099

If you have any questions, please contact me at (713) 988-2995.

Main Miss/er January 10, 1997
Signature

Distribution: (1) Lab Copy (2) Region Copy

LOCKHEED MARTIN SERVICES GROUP 10101 Southwest Freeway, Suite 500 HOUSTON, TX 77074

MEMORANDUM

DATE: January 10, 1997

TO: Dr. Melvin Ritter, ESAT RPO, Region VI

FROM: Dr. Tom C. H. Chiang, ESAT ETM, Region VI

SUBJECT: CLP Data Review CN U

REF: TDF # 6-7114A

ESAT # 0-1787

Attached is the data review summary for Case # 25159

SDG # FFG24

Site Wilcox Oil

COMMENTS:

- I. CONTRACTUAL ASSESSMENT OF THE DATA PACKAGE
 - A. The data package contained the following contractual noncompliance as determined by the CCS audit and confirmed by hard copy data review.

The laboratory extracted BNA samples FF-G24 and FF-G24MS 12 days past the holding time limit, 22 days after sample receipt (OLM03.0, D-18/SVOA, 8.4.1). Sample results were not technically affected by this non-compliance.

B. The data package contained the following contractual non-compliance as determined by the hard copy data review but not by CCS.

The data package was three days late.

II. TECHNICAL/USABILITY ASSESSMENT OF THE DATA PACKAGE

A total of 125 results were reviewed for this data package. The data package is technically acceptable although it contained two contractual non-compliances.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6

HOUSTON BRANCH

10625 FALLSTONE ROAD HOUSTON, TEXAS 77099

ORGANIC REGIONAL DATA ASSESSMENT

CASE NO. 25159	SITE Wilcox Cil
LABORATORY AATS	NO. OF SAMPLES 1
CONTRACT# 68-D5-0022	MATRIX Soil
SDG# FFG24	REVIEWER (IF NOT ESD) ESAT
SOW# RAS SOW OLM03.2	REVIEWER'S NAME <u>Maria Missler</u>
ACCT# <u>7FAXJN28</u> SF# <u>FAXUZZ</u>	COMPLETION DATE January 10, 1997
SAMPLE NO. FF-G24	
	·
	
DATA ASS	<u>ISSMENT SUMMARY</u>
1	VOA BNA PEST
1. HOLDING TIMES	<u> </u>
2. GC/MS TUNE/INSTR. PERFORM.	
3. CALIBRATIONS	
4. BLANKS	<u> </u>
5. SMC/SURROGATES	<u> </u>
6. MATRIX SPIKE/DUPLICATE	<u> </u>
7. OTHER QC	N/A N/A N/A
8. INTERNAL STANDARDS	<u> </u>
9. COMPOUND ID/QUANTITATION	<u> </u>
10. PERFORMANCE/COMPLETENESS	<u> </u>
11. CVERALL ASSESSMENT	<u> </u>

- Data had no problems.
 Data qualified because of major or minor problems.
- Z = Data unacceptable.
- NA = Not applicable.

ACTION ITEMS: BNA samples FF-G24 and FF-G24MS were extracted 12 days past the contractual holding time limit.

AREA OF CONCERN: The data package arrived three days late.

COMMENTS/CLARIFICATIONS REGION 6 CLP OA REVIEW

CASE _	25159	SDG _	FFG24	SITE _	Wilcox Oil		LAB _	AATS .
The fo	ollowing is porting thi	s a sum is CLP	mary of data:	sample	qualifiers	used	by Reg	gion 6
<u></u>	<u> </u>	Accer	table	. <u>P</u> :	rovisional	_0	nacce	<u>otable</u>
VC BN PE			1 1 1			_		

COMMENTS: The case consisted of one soil sample for complete RAS organic analysis. The OTR/COC Record designated sample FF-G24 for MS/MSD analyses. The data package arrived 3 days late for the contractual 35-day turnaround time. BNA samples FF-G24 and FF-G24MS were extracted 12 days past the contractual holding time limit.

The laboratory analyzed the VOA/BNA soil samples following the low level methods. No TCL analytes were reported in the sample above the CRQL's. Results are acceptable for sample FF-G24.

The technical usability of all reported sample results is appropriately indicated by ESAT's final data qualifiers in the attached Data Summary Tables. An Evidence Audit was conducted for the Complete Sample Delivery Group File (CSF), and the Evidence Inventory Checklist is attached to this report.

THE FOLLOWING REVIEW NARRATIVE ADDRESSES BOTH CONTRACTUAL AND TECHNICAL ISSUES. THE ASSESSMENT MADE FOR EACH QC PARAMETER IS SOLELY BASED ON THE TECHNICAL DATA USABILITY, WHICH MAY NOT NECESSARILY BE AFFECTED BY CONTRACTUAL PROBLEMS.

Holding Times: Acceptable. The sample met the contractual holding time requirements except as follows. No technical holding time criteria exist for soil samples.

BNA samples FF-G24 and FF-G24MS were extracted 22 days after collection and receipt. This holding time problem did not affect the spiked sample results as the spike compounds were added at the time of sample extraction. The reviewer did not qualify results for the native sample FF-G24 because the reported TCL analyte results were consistent with those in sample FF-G24MSD, which met the holding time criteria.

Tuning/Performance: Acceptable. The 3FB and DFTPP analyses met GC/MS tuning criteria. The VOA and BNA sample analyses were within 12 hours of the respective BFB/DFTPP analyses. Pest/PCB analyses met performance guidelines.

CASE 25159 SDG FFG24 SITE Wilcox Oil LAB AATS

3. Calibrations: Acceptable. Target compounds generally met contractual and technical criteria for all fractions.

Pest/PCB The reviewer was unable to verify the following calibration results on both analytical columns based on the raw data submitted:

- all analyte and surrogate initial calibration factors; and
- all nominal amounts in calibration verification analyses PEM and INDAM/INDBM.

The results reported by the laboratory differed consistently by a factor of two from the reviewer-calculated ones. The reviewer did not qualify results because the reported %RSD and %D values were not affected. However, the laboratory was contacted for clarification of this discrepancy.

4. Blanks: Acceptable. The method, storage, and instrument blanks met contractual requirements.

The BNA method blanks contained phthalates below the CRQL's. In the reviewer's opinion, all "B"-flagged laboratory results should be used as quantitation limits because the sample concentrations were less than 10% the associated blank concentrations.

The VCA storage blank and its associated method blank contained acetone below the CRQL. Sample results were not affected.

5. System Monitoring Compounds (SMC)/Surrogates: Acceptable.

VOA/BNA The VOA MS/MSD analyses had low recoveries for one SMC. Since the unspiked sample had acceptable recoveries, results were not qualified. Other SMC and surrogate recoveries met QC criteria.

Pest/PCB All reported surrogate recoveries were a factor of two lower than the reviewer-calculated ones. This problem is a consequence of the incorrect calibration factors reported for the initial calibrations (see section 3). Since surrogate recoveries were within QC limits based on the reviewer's calculations, no results were qualified.

6. Matrix Spike/Matrix Spike Duplicate: Acceptable. The MS/MSD analyses met recovery and precision requirements with one exception. Trichloroethene had a high MS recovery. Since the analyte was not detected in the unspiked sample, sample results were not affected.

CASE 25159 SDG FFG24 SITE Wilcox Oil LAB AATS

- 7. Other QC: Not Applicable.
- 8. Internal Standards: Acceptable. The internal standard (IS) responses and retention times were within the QC limits for all analyses.
- 9. Compound Identity/Quantitation: Acceptable. No TCL analytes were detected in the sample above the CRQL's. PAH's and phthalates were reported below the CRQL's. Reported analytes met compound identification criteria.
- 10. Performance/Completeness: Acceptable. The data package was complete with minor deficiencies. The laboratory was contacted for correction and resubmission (see attached FAX Record Log).
- 11. Overall Assessment: Data are acceptable for sample FF-G24.

ORGANIC DATA QUALIFIER DEFINITIONS

The following definitions provide brief explanations of the ESAT-Region 6 qualifiers assigned to results in the Data Summary Table.

- U Not detected at reported quantitation limit.
- N Identification is tentative.
- J Estimated value.
- R Unusable.
- A High biased. Actual concentration may be lower than the concentration reported.
- Low biased. Actual concentration may be higher than the concentration reported.
- F+ A false positive exists.
- F- A false negative exists.
- B This result may be high biased because of laboratory/field contamination. The reported concentration is above 5X or 10X the concentration reported in the method/field blank.
- **UJ** Estimated quantitation limit.
- T Identification is questionable because of absence of other commonly coexisting pesticides.
- * Result not recommended for use because of associated QA/QC performance inferior to that from other analysis.

Case No.: 25159

SDG:

FFG24

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units: ug/Kg

	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G24						
Chloromethane	11 7						
Bromonechane	== 3						
Vinyl chloride	12 0						
Chloroethane	11 0						
Methylene chloride	i II I						
Acetone	11 U						
Carbon disulfide	11 U						
1,1-Dichloroethene	11. T						
1,1-Dichlorcethane	11 5						
1,2-Dichlorcethene (total)	11 5						
Chloroform	: :: 5						
1.2-Dichlorcethane							
i, a-picatorcecame	ll U						_
2-Butanone	11 5						•
1,1,1-Trichloroechane	11 5						
Carbon cecrachloride	:: J						
Bromodichloromethane	11 7						
1,2-Dichloropropane	11 7						
cis-1,3-Dichloropropene	11 3						
Trichlorcethene	11 J						
Dibromochloromethane	12 0						
1,1,2-Trichlorcethane	77 A						
Benzene !	11 0						
trans-1,3-Dichloropropene	11 U						
Bromoform	11 U						
4-Methyl-2-pentanone	11 0						
2-Hexanone	11 0						
Terrachloroethere	11 U						
1,1,2,2-Tetrachlordethane ,	:: 7						
Toluene	11 7						
Chlorobenzene	11 3						
Sthylbenzene	11 U						
Styrene	11 U						
Xylenes (total)	וו ס						
i I							
Sample wc (g):	. s						
*Moiscure:	_o						
Dilution Factor:	<u>.</u>						
Level:	ICM						
Number of TIC's:	0 ,						
•	i						

Case No.: 25159

SDG:

FFG24

.eviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units:

ug/Kg

SEMIYOLATILES	l FLAG	FLAG	FLAG	FLAG	Flag	FLAG	FLAG
	SED-10		· · · · · ·				
EPA SAMPLE NUMBER:	FF-G24						
Phenol	! 370 ປັ						
bis.2-Chloroethyl)ether	370 U						
2-Chlorophenol	370 U						
_							
1.3-Dishlorobenzene	370 U						
1,4-Dishlorobenzene	ט 370		•				
1,2-Dishlorobenzane	370 U						
2-Mechvlohenol	370 T						
2.2'-Oxybis(1-chloropropane)	370 U		•				
4-Meshylphenol	370 U	•					
· · · · · · · · · · · · · · · · · · ·							
N-Nitroso-di-n-propylamine	370 U						
Hexachlorcethane	370 U						
Nitrobenzene	υ οτε						
	370						
Isophorone I-Nizropaenol	370 U 370 U						
2,4-Dimethylphenol	370 g						
1, 1 0 and 1 - 2 - 1 - 2 - 1	2.00						
ois,2-Chloroethoxy) mechane	370 U						
2,4-Dichlorophenol	_ 370 U						
1,2,4-Trichlorobenzene	370 T						
Nachthalene !	700 0						
4-Chloroaniline	370 U 370 U						
Hexachlorobutadiene	370 3						
_ 							
4-Chloro-3-methylphenol	370 U						
2-Mechylnaphthalene	370 tī						
Hexachlorocyclopentadiene	370 U						
2,4,5-Trichlorophenol	370 U						
2,4,5-Trichlorophenol	920 Ü						-
2-Chloronaphthalene	370 IJ						
2-Nitroaniline	920 J						
Dimethylphthalate	370 J						
AcenaphChylene	370 IJ						
2.5-Dimitrocoluene	370 U						
3-Nitroaniline	920 U						
Acenaphthene	370 U						
_							
2.4-Simitrophenol	920 U						
4-Nitrophenol	920 Ŭ						
Dibensofuran	370 U						
2,4-Dimitrotoluene	370 ט						
Diethylphthalate	ט מדנ						
4-Chlorophenyl-phenylether	370 U						
<u> </u>							
Fluorene	370 U						
4-Nitreantline 4,6-Dinitro-2-methylphenol	920 U						
t, o-panacio-z-methytinenot [920 U,		•				
N-Nizrosodiphenylamine	370 U						
4-Bromophenyl-phenylether	370 U						
Hexacilorobenzene	370 U						
Pencachlorophenol Phenanthrene	920 U	-					
Anchracene	22 J 370 U						
	•						

Case No.: 25153

FFG24

Reviewer: M. Missler

Laboratory: AATS

Matrix:

SOIL

Units: ug/Kg

SEMIVOLATILES	ļ	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EFA SAMPLE NUMBER:	 FF-G24							
Carbazole	 370	U						
Di-n-bucylphthalace	370	T T						
Fluoranthene	22	J.						
Pyrene	I 58	J.						
Butylbenzylphthalate	370	ਹ						
3,3'-Dichlorobenzidine	370	ŭ						
Benzo (a) anchracene	27	ŭ						
Chrysene	54	J						
his(2-Ethylhexyl)phthalate	370 1	σ						
Di-n-octylphthalate	, 370 1	_						
Benzo(b) fluoranthene	30							
Benzo(k) fluoranchene	370 1	o o						
Benzo (al pyrene	20							
Indeno(1.2 3-cd)pyrene	370 7							
Dibenz (a, h) anthracene	370 7	j.						
Senzo(g,h,:)perylene	370 :	J						
Sample wc (g):	30		-					
%Moiscure:	10							
Dilution Factor:	1			•				
Levei: i	LCW					-		
Number of TIC's:	1.3							
,								

Case No.: 25159

SDG:

?FG24

Reviewer: M. Missler

Laboratory: AATS

Matrix:

SOIL

Units:

ug/Kg

PESTICIDES/PCEs	! FLAG	FLAG	FLAG	FLAG	<u>Flag</u>	FLAG	FLAG
EPA SAMPLE NOMBER:	 FF-G24		-				
alpha-BHC	 1.9 U						
beta-BHC	1.9 0						
delta-BHC	1.9 U						
gamma-BHC (lindane)	1.9 0						
Heptachlor	1.9 ປັ						
Aldrin	1.9 ប						
Heptachlor spoxice	1.9 Ū						
Endosulfan I	1.9 U						
Dieldrin	3.7 U						
4,4'-DDE Endria	3.7 U				_		
Endosulfan II	3.7 ซ 3.7 ซ						
Sticoscilan II	3.7 J						
4,4'-000	3.7 U						
Endosulfan sulfate	3.7 ปี				•		
4,4'-DDT	3.7 U						
:							
Methexychlor	19 U						
Endrin kecone	3.7 U						
Endrin aldehyde	3.7 U						
alpha-Chlordane	1.9 σ						
gamma-Chlordane	1.9 U						
Toxaphene	190 U						
resulption of	250 0					·	
Aroclor-1016	37 ਹ						
Arocicr-1221	74 U						
Aroclor-1232	37 ปี						
Aroclor-1242 Aroclor-1248	37 U						
Aroclor-1248 Aroclor-1254	37 ਹ 37 ਹ						
AFOCISE-1254	37 3						
Aroclor-1260	37 U		•				
i							
į							
Sample wt [g1:]	30						
tMoisture:	10						
Dilution Factor: i	1						
Different ractor:	1						
1							

Note: For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

INORGANIC/ORGANIC COMPLETE SDG FILE (CSF) INVENTORY CHECKLIST

Case No. 2	5159 SDG No. <u>FFG24</u> SDG Nos. To Foli	ow SAS No.	Date F	Rec _	12/27/96
EPA Lab ID:	AATS	ORIGINALS	YES	УО	N/A
Lab Location:	Broken Arrow, OK 74012	CUSTODY SEALS			
Region:	6 Audit No.: 25159/FFG24	Present on package?	X	l	
Re_Submitted	CSF? Yes No X	2. Intact upon receipt?	Х		
Box No(s):	1	FORM DC-2			
COMMENTS	:	Numbering scheme accurate?	Х		
		Are enclosed documents listed?	Х		
13 No as perso	rbills were available as the samples were delivered in on.	5. Are listed documents enclosed?	Х	Ĺ. <u>.</u>	
•		FORM DC-1			
		6. Present?	Х		
		7. Complete?	х		
		8. Accurate?	Х		
		CHAIN-OF-CUSTODY RECORD(s)			
		9. Signed?	X		
		10. Dated?	X		
		TRAFFIC REPORT(s) PACKING LIST(s)			
		11. Signed?	\mathbf{x}		
		12. Dated?	x		
		AIRBILLS/AIRBILL STICKER			1
		13. Present?			x
		14. Signed?			x
		15. Dated?			х
		SAMPLE TAGS			
		16. Does DC-1 list tags as being included?	x		
		[7. Present?	x		i
		OTHER DOCUMENTS			
		18. Complete?	х		İ
		19. Legible?	x		
		20. Original?		х	\top
Over for additio	onai comments.	20a.If "NO", does the copy indicate where original documents are located?	х		
Audited by:	Library Klissler	Maria Missler / ESAT Data Reviewer	Date Date)7
Audited by:			Date		
riddice by:	Signature	Printed Name/Title	,		
<u> </u>	TO RE COM	MPLETED BY CEAT			
Date Recvd		Date Entered: Date Reviewed	l:		
E	intered by:				
Rev	riewed by:				
	Signature	Printed Name/Title			

Page 1 of 2

In Reference to Case No(s):
 25159 SDG: FFG24 (0-1787)

Contract Laboratory Program REGIONAL/LABORATORY COMMUNICATION SYSTEM FAX Record Log

	Date of Laborato Lab Cont	ry Name:	January 10, 1997 AATS Harry Borg	
	Region: Regional	. Contact:	6 Maria Missler - ESAT	
	FAX init	iated by:	Laboratory X_R	egion
In	reference	to data fo	or the following fractions:	
	VCA	Pest/PC3	3	

Summary of Questions/Issues:

A. VOA

1. Method Blank VBLK3: A spectrum was submitted for the TIC at 12.190 minutes (page 145) but the TIC was not listed on Form I VOA-TIC (page 138). Please revise the Form I VCA-TIC to include this TIC and resubmit.

B. Pest/PCB

- 1. Forms VI PEST-2, pages 397 and 398: The reviewer was unable to reproduce the calibration factors reported for all TCL analytes and surrogates based on the raw data (pages 431-444). Please correct and resubmit these forms to match the raw data or demonstrate your calculations.
- 2. Forms VII PEST-1 and Forms VII PEST-2, pages 406-411: The reviewer was unable to reproduce the nominal amount on these forms based on a 0.5 μ L injection. According to your case narrative (pages 4-7) the nominal amount on these forms should be half of what is reported. Please correct these forms to match your raw data and to match the corrected calibration factors in question 1 above.

FAX COMMUNICATION LOG

Continuation Page Continuation Page 2
Laboratory/Contact AATS / Harry Borg In Reference To Case No. 25159 SDG: FFG24

NOTE: Any laboratory resubmission should be submitted either as an addendum to the original CSF with a revised Form DC-2 or submitted as a new CSF with a new Form DC-2 (OLM03.0, p. B-29), except those containing only replacement pages. Custody seals are required for all CSF resubmission shipments.

Please respond to the above items. Region 6 resubmissions may be included with CCS response or sent separately within 7 days to:

> Mr. Mahmoud El-Feky U.S. EPA Region 6 Laboratory 10625 Fallstone Road Houston, TX 77099

If you have any questions, please contact me at (713) 988-2995.

Laro Wisser January 10, 1997
Signature Date

Distribution: (1) Lab Copy (2) Region Copy



23 January 1997

Mahmoud El-Feky USEPA Region VI 10625 Fallstone Road Houston, TX 77099

RE: ESAT review of Complete SDG File (CSF) CLP Case #25159 - SDG#MFGZ66

Dear Mr. El-Feky:

Please find enclosed ARI's response to the comments generated during the above referenced CSF review. The following is a question by question response:

Question/Issue #1 - The person who compiled the documents forgot to put the sample tag in a plastic bag. This contract deviation has been no ed for future Region 6 cases.

Question/Issue #2 - Corrected Form 14 is enclosed.

Question/Issue #3 - Corrected Form 14 is enclosed.

Question/Issue #4 - Corrected Form 14 and corrected raw data are enclosed.

If you have any additional questions, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Jeff J. Reitan Project Manager jeff@arilabs.com

enclosure

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION 6 EPA HOUSTON LABORATORY 10625 FALLSTONE ROAD HOUSTON, TX 77099

RESUBMITTED DATA REVIEW REPORT

DATE: January 29, 1997 CASE #: 25159

TO: L. Biasco, 6SF-RA SDG #: MFGZ66

<u>USEPA Region 6</u> Site Name: <u>WILCOX OIL</u>

Lab Name: ARI

From: Mervin Doucet TDF #: 6-7129A

ESAT

EFFECTS OF RESUBMITTED INFORMATION ON THE ORIGINAL DATA:

Response to Region Request (Received 1/24/97):

The resubmitted information does not affect the original data review. The laboratory resubmitted all requested explanations, forms, and raw data. Please place the resubmitted material in the data package.

Response to CCS Request (Received 1/24/97):

The resubmitted information does not affect the original data review. The laboratory submitted explanations and resubmitted data requested by CCS. Pages 53 through 84 can be discarded because they were already submitted in the Region's resubmission. Please place the remaining resubmitted material in the data package.

I2077

Lockheed Martin Services Group ESAT Region 6

One Sterling Plaza, 10101 Southwest Freeway, Suite 500 Houston, TX 77074 TEL: (713) 988-2959

FACSIMILE COVER SHEET

Please deliver the following pages to:
Name Paul Jay Kuhn
Firm ARI
City Seattle State WA
Telephone 206-621-6490 Ext.
Fax Telephone No. 206-621-7523 Ext
Sender:
Name Mervin Doucet ESAT
Date January 17, 1997 Time
Total Number of pages including this Cover Sheet 2
If you do not receive all the pages or if any pages are unclear, please call: (713) 988-2959
MESSAGES:

Fax No. (713) 988-2994

Case 25159 SDG MFGZ66 Page _1 of 1 ESAT FILE NO.: **I2077**

Contract Laboratory Program REGIONAL/LABORATORY COMMUNICATION SYSTEM FAX Record Log

Date of FAX:

January 17, 1997

Laboratory Name:

ARI

Lab Contact:

Paul Jav Kuhn

Region:

<u>6</u>

Regional Contact:

Mervin Doucet (ESAT)

FAX Initiated by: Region

In reference to data for the following sample number:

MFG-Z66

Summary of Questions/Issues:

- The sample tag was not sealed in a plastic bag (SOW ILM04.0, 1. page B-13, F.3.d). Please submit an acknowledgement of this contractual deviation and note for future reference.
- According to the raw data (page 271), the selenium analysis 2. time on the Form 14 (page 53) for sample MFG-Z66 should be 15:33. Please resubmit the corrected Form 14.
- According to the raw data (page 286), the mercury analysis times for most standards do not match the analysis times on 3. the Form 14 (page 55). Please make the necessary corrections and resubmit.
- According to the raw data (pages 80-84), the ICP analysis times for all standards do not match the analysis times on the Form 14 (page 53). Please make the necessary corrections and resubmit.

EPA expects the laboratory to look into items and submit data within seven days to Mahmoud El-Feky, U.S. EPA, 10625 Fallstone Road, Houston TX 77099.

1/17/97

Date

Distribution: (1) Lab Copy (2) Region Copy

U.S. EPA - CLP

14 ANALYSIS RUN LOG

Lab Name: ANALYTICAL_RESOURCES_INC. Contract: 68D50134___

Lab Code: ARI___ Case No.: 25159_

SAS No.: ____ SDG No.:MFGZ66

Instrument ID Number: VARIAN1 300 _

Method: F_

Start Date: 12/14/96

End Date: 12/14/96

	·												Ar	ıa]	Lyt	ces	3						 -				_
EPA		_		[_,																							_
Sample	D/F	Time	% R	Α	S				C	n	С	U	C	F		M		H	N	K	S		N	Н	V	Z	
No.				L	В	s	A	E	D	A	R	0	ט	Ε	В	G	N	G	I		E	G	A	L		N	IV.
CCB	1.00	1450		-		-		-	-	-	-	_	-	-	-	-	-	-	-	-	$\overline{\mathbf{x}}$		-	_	-	_	-
ZZZZZZ	1.00	1455		_	_	_	_	_	_	-			-		_	_	-		_	_			-	_			
ZZZZZZA	1.00	1500	90.0	-	_	_	_	_		_	_	_	-		_	_	_	1	_	_	-	-		_	_		_
ZZZZZZ	1.00	1504		-	_	_	_	-	-		_	_	_		_	_	_	_		-	-		_	_	_	_	_
ZZZZZZA	1.00	1509	60.0	-	_	-			_	_	_	-		1	-	-		_	_	_	-	-	_	_	_	_	
ZZZZZZ	1.00	1514		-	-	~	_				_	_	-	-	•		_	_	_	_	-	-	_	-	_	_	_
ZZZZZZA	1.00	1518	63.0	-	_	-[_	_	_		-		-		_	_	_	-	-			-		_	
ZZZZZZ	1.00	1523		-	_	_	_	-	_	_		_	-	-	_	-	-	_	_	_			1	_	_		-
ZZZZZZA	1.00	1528	91.0	-	_	-	-		-1	_	_	-	-	_	-	_	_	1	_	_		-	7	_	_	_	_
MFGZ66	1.00	1533		-	_	-1	_	_	_	_	-		-	_	-	_	7	_	-		$\overline{\mathbf{x}}$	_	_	-	-	_	
MFGZ66A	1.00	1537	92.0	-	_		_	-		_	_	_	_		_		-:		-	_	Х	_	_		-	_	-
ccv -	1.00	1542				-1	_	_	-	_	~	_	_	_	_	_	1		-	-	X	_	_	-	_	_	
CCB	1.00	1547		-		-1	-		-	_	-	_	_	_	-	-	-	-	-	_	x	_	_		_	-	
so	1.00	1552		-		-	_	_	-	_	-	-				-		_	_	_	X	_	_	_	_	_	i —
CCV	1.00	1557		-	_	-1	_	_	_	_	-	_	_	_	_	_	_			_	X	-	_	_	-	_	i —
CCB	1.00	1601			-1	-1	_		-	_	-	_	-		-	-	-	_	_	_	X	-	-			1	_
MFGZ66D	1.00	1606		-		-	_			_	-	_	-	_	_	_	_		_	_	X	-	_	-		-	-
MFGZ66DA	1.00	1610	98.0	-	_	-		-		_		_	-		_	-	-		_	_	X	-	-	-			-
MFGZ66S	1.00	1615		1-1	_			_		_	_	‡	-	_	_	-	-	1	-	_	X	i –	-	-	-	-	-
MFGZ66SĀ	1.00	1619	94.0		_	-		-	_		_	-	-	-	_	-	-	-	1	-	Х		-	-	-	_	-
PBS	1.00	1624		-	_	_	_	_	_	_	_	_	-	-						_	Х	-	-	-	-	_	_
PBSA	1.00	1628	107.0	-	_		_	_		-	-	_	-	-		-	-		_	-	X	-	-	-	-	_	-
LCSS	10.00	1633			-	_	-	_	_	7	_	_	-	_	-	-	-	-	-	-	X	-	1-	-	-	_	-
LCSSA	10.00	1.637	83.0	-	_	_	_	_		_		_	-	[-	-	-	-	-	_	[_	X	[-	-	-	-	-	[
CCV	1.00	1642		-			_	-		-	-	-	-	-	-	-		-	-	-	X	-	-	-	-	-	-
CCB	1.00	1646	-	_	_	_		_	_	-	 	-	-	-	-	1-	-	-	-	-	X	-	-		-	-	-
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FORM XIV - IN

000053 ILM04.0

U.S. EPA - CLP

ANALYSIS RUN LOG

Lab Name: ANALYTICAL_RESOURCES_INC. Contract: 68D50134__

Lab Code: ARI Case No.: 25159 SAS No.: SDG No.:MFGZ66

Instrument ID Number: BUCK MERCURY_ Method: CV

Start Date: 12/04/96

End Date: 12/04/96

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EPA		ļ]											Al	ıa.	ιуι	ces	3										
Sample	D/F	Time	<u>۽</u> ا	R	Ā	s	Α	B	B	C	C	a	C	С	F	P	M	м	H	N	K	S	À	N	Т	v	\mathbf{z}	c
No.	2, -		ľ		L	В	S	A	E	D	A	C R	o	U	E	В	G	N	G	I	-	E	G	Α	Τ,	•	N	
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CCV	1.00	1354			1-	-	_	-	_		_		_	_	-		_	_	x	-		_	_	_	_	-		_
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CRA	1.00	1358			-	-	_		_			_	_	_		_	_		X	-	_				_	_		_
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CCV	1.00	1429	<u> </u>																$ \overline{\mathbf{x}} $				_	<u> </u>		l_	_	l_
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CCV	1.00	1442												_		<u> </u>	<u> </u>		X				<u>[</u>					
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FORM XIV - IN

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itandardization Rpt.

€tandar	dization f	Rpt.	50) = : Sun	12-15-96	1320 01:22:53 PM	page
Method:	ICPCLP1	Standa	rd: STD1-B	lank			
Elem Avge	AG 0390	AL .4552	AS .0676	B .0229	8A .0019	BE .0929	CA .0371
SDev %RSD	.0041 10.56	.0266 5.832	.0216 31.99	.0029 12.50	.0008	.0014 1.538	.0029 7.692
#1 #2	0343 0414	.4429 .4857	.0429 .0771	.0257 .0200	.0029 .001 <u>.</u> 4	.0914 .0943	.0400 .0371
#3	0414	.4371	.0829	.0229	.0014	.0929	.0343
Elem Avge	CD .0205	CO .0067	CR .0071	CU .0486	FE .0195	К 1552	MG .0048
SDev %RSD	.0030 14.52	.0030 44.61	.0014	.0029 5.882	.0109 55.89	.0246 15.84	.0060 124.9
#1	.0229	.0057	.0071	.0486	.0171	~.1271	.0029
#2	.0214	.0100	0057	.0514	.0314	1657	-0114
#3	.0171	.0043	.0086	.0457	.0100	1729	.0000
Elem Avge	MN .0019	MO .0029	NA .5867	NI 0686	PB .0129	SB .0548	SE .0238
SDe∨ %RSD	.0008 43.30	.0029 100.0	.0208 3.548	.0029 4.167	.0124 96.86	.0064 11.76	.0060 24.98
#1 #2	.0014 .0029	.0000 .0029	.6100 .5700	0714 0657	.0071 .0043	.0543 .0614	.0171 .0257
#3	.0014	.0057	.5800	0686	.0271	.0486	.0286
Elem Avge	SI .1529	SN 0033	SR .0629	TI .0129	TL 0886	v 0248	ZN .0119
SDev	.0043	.0064	.0000	.0000	.0311	.0064	.0008
%RSD	2.804	193.3	.0000	.0000	35.15	26.01	6.928
#1 #2	.1571 .1529	~.0029	.0629	.0129	1029		.0114
#4 #2	1404	.0029	.0629	.0129	0529	0186	.0114

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Standard	ization Rp	t.	>	Sun	12-15-96	01 -28 :45 PM	page
Method: 1	(CPCLP1	Standar	d: STD2		·		
Elem Avge SDev %RSD	BA 52.48 .16 .3103	CA 23.67 .07 .2942	CD 55.15 .13 .2424	CO 25.29 .10 .3785	CR 16.91 .05 .2854	CU 61.41 .22 .3653	MN 30.10 .08 .2747
#1 #2 #3	52.66 52.44 52.35	23.74 23.68 23.60	55.28 55.16 55.01	25.39 25.29 25.19	16.95 16.92 16.86	61.64 61.41 61.19	30.17 30.13 30.01
Avge SDev %RSD	V 63.46 .32 .5100 63.76 63.50			-			
	63.12						

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1328 Sun 12-15-96 01:33:03 PM

Standardization Rpt.

Method: ICPCLP1 Standard: STD5

Elem	к	
Avge	12.77	
SDev	.05	
%RSD	.4121	
#1	12.83	
#2	12.74	
# 2	12 72	

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Standardization Rpt.

1333 Sun 12-15-96 01:37:42 PM

page :

Method:	ICPCLP1	Standa	ard: STD4		
Elem	MO	SB	SI	SN	TI
Avge	21.28	18.06	28.68	10.81	55.77
SDev	.03	.11	.18	.03	.37
%RSD	.1622	.5859	.6345	.3107	.6551
#1	21.32	18.16	28.88	10.85	56.19
#2	21.25	18.06	28.61	10.80	55.61
#3	21.28	17.95	28.54	10.79	55.51

000083 Alt 1197

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fitandar	dization F	Rpt.	>	Sun :	12-15- 9 6	0 1:42: 43 PM	page
Method:	ICPCLP1	Standa	ard: STD3				
Elem	AG	AL	AS	B	BE	FE	MG
Avge	3.336	29.52	10.50	24.35	166.4	24.87	7.388
SDev	.011	.11	.07	.14	.6	.08	.028
%RSD	.3233	.3712	.6696	.5843	.3784	.3290	.3781
#1	3.324	29.39	10.43	24.19	165.7	24.78	7.380
#2	3.346	29.59	10.57	24.40	166.8	24.90	7.419
#3	3.337	29.57	10.51	24.46	166.7	24.94	7.364
Elem	NA	NI	PE	SE	SR	TL	ZN
Avge	44.83	52 41	13.43	7.482	48.70	10.86	9.844
SDev	.16	.27	.04	.027	.20	.06	.014
%RSD	.3617	.5209	.3057	.3629	.4043	.5095	.1454
#1	44.65	52.11	13.40	7.454	48.47	10.80	9.830
#2	44.97	52.64	13.41	7.509	48.82	10.91	9.843
#3	44.86	52.49	13.47	7.483	48.80	10.87	9.859

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COVER SHEET

LABORATORY RESPONSE TO RESULTS OF CONTRACT COMPLIANCE SCREENING (CCS)

Response To: (Check		Organic CCS Inorganic CCS							
Response materials sho	ould be sent to the attention	of the CCS Coordina	itor.						
Labcode: A	2	Response Date:	1/25/47	-					
		Date Screening Results Received at Laboratory:	1/10/47						
EPA Contract No.	68-05-0134	<u> </u>	, ,						
Case No.	25159		-						
SDG No.	68-15-0134 25159 UF6766								
Sample Nos.*		 		•					
			· · · · · · · · · · · · · · · · · · ·						
	<u>* </u>								

Only list sample numbers that require reconciliation.

This form is used to identify materials sent in response to results of Contract Compliance Screening (CCS). A separate form must accompany the response for each SDG.

Please indicate (on the attached continuation form) which fractions and/or which criteria correspond with your resubmission. Response materials sent to CCS should also be copied to the Region and to EMSL/LV, each with this blue Cover Sheet.

LABORATORY RESPONSE TO RESULTS OF CCS

CRITERION	COMMENTS
1417.2	Raw data average is morrect: This is
	a rounding such her with our CLP
	reporting syttmane, which the oupsher,
	to dute has been unwilling to
	f.x
AA36	Replicate injections pet performed ves
	Thung were They just are not in
	The EDD. Our Softwire
	supplier & instrument numbacture
	are working on This problem.
AB05.2	EDD problem - raw dots and forms
	correct.
A CC3.2	EDD error - raw disk and forms correct.
AFOI. I	EDD error- naw date and forms are correct.
AF01.3	EDD error - raw data and forms are correct.
AFU3.Z	EDD error- row doba and forms are correct.
A6042	Spike added is incorrect: Yes for CN
	the scenepte was spiled at 150 uple not
·	100 gale Thes is an error and is
A	not contract confirment.
A606.2	EDD error
A #04	EDD error
AJUH. 1	EDD error
AIUG.1	EDD ever
AJ05.2	EDI error
Akilo 2	EDD error
ALile	EDD ench

LABORATORY RESPONSE TO RESULTS OF CCS

CRITERION	COMMENTS
AROB	EDD error - vous data and forms are correct.
46/18	Jes there were Il samples an between
	CVICE pairs this is not contractual
	so all the sumpters were rerun. a!
	of the data is not "X" an form 14
	because of Two:
¥ AQ37	Sample was high on the IIP for
	Pt - so trased on this into the
	sample was see diluted at 2x
	for GFA, The 2x delutions was
	over range so the sample was turn
	run at Ex for quaristation
Moi	411 corrected raw dute and forms
	have bein we submitted
	
 	
	,
	<u> </u>

14 ANALYSIS RUN LOG

Lab	Name:	ANALYTICAL	RESOURCES	INC.		Contract:	68D50134
		_	- -		 		7 17 7 7 7 7 2

Lab Code: ARI ___ Case No.: 25159 ___ SAS No.: ___ SDG No.:MFGZ66

Instrument ID Number: VARIAN1 300 ____ Method: F___

Start Date: 12/14/96 End Date: 12/14/96

EPA					·								Aı	na.	Lyt	ces	3	-		-			;		-	=======================================	 -
Sample	D/F	Time	% R	- -	10	7	10	Б		~			10	172	n	N.C	N	TT	NT	77	<u> </u>	1 2	NT.	m	V	Z	-
No.	D/F	TTIME	7.6	A L	S	A S	B A		C D	C A	C R	C	C U	F	P B	G	M N	G	NI	K	S	A G	N A	T	\ \		1
NO.	ļ	'		 -	5	٥	A	E	ש	A	ĸ	U	U	ഥ	В	G	IA	G	1		ŀ	G	A	1		IN	ľ
CCB	1.00	1450		-	-		_		-			-	_		_	_		-	_	_	$\bar{\mathbf{x}}$	-	-	-	-	-	-
$ZZZ\overline{ZZZ}$	1.00	1455		-	-	-	_	_		_	_			_		_	_	_	_	_]_	i —	-		_	_
ZZZZZZA	1.00	1500	90.0	-	_	_	_		-		_	_	_		_	_	_	_		-	-	_	-	-		-	_
ZZZZZZ	1.00	1504	l— ·	-	-	_		_	-		_			_	_	1	_	_	_	_	-	1-	-	-	_	-1	_
ZZZZZZA	1.00	1509	60.0		-	_	_	_	-		_	_	-			_	_	_	_		-	-	-	-		_	_
ZZZZZZ	1.00	1514		-	_		-	_		-		_	-	_	_	_		_	_	_	-	-	-	-		_	_
ZZZZZZA	1.00	1518	63.0	-	_	-	_	_	-	-	-1	_	-	_		+	_	_	_	_	—	_		1-		_	-
ZZZZZZ	1.00	1523]	-	-		-		-	-		_	-	-	_	_	-	-	_		-	-		<u> </u>	-	-	-
ZZZZZZĀ	1.00	1528	91.0					-	-	-1	-	-	-	-	-	-	-	-	-	-	-	_	-		-		_
MFGZ66	1.00	1533		-	_	_	-	-	-	-	-	-	-	-	-		-	-1	_	-	$\overline{\mathbf{x}}$	-	_	_	-	_	
MFGZ66A	1.00	1537	92.0	-	-	-	-	-	_	-1	-	-		-	-			-	_	-	Х	_		-	-	-	
CCV	1.00	1542		-	-		-		_	-]	-	-		-			-	-1		-	x		-		-	-	
CCB	1.00	1547		-	-			-		-	-	-	-		-	-	-		-	-	X	-	-		-	-	_
S0	1.00	1552		-	-	-	-			-1	-	-	-	-	-	-	-	-	-	_	x	_	-				_
CCV	1.00	1557		-	-	-	-	-	-	-	-	-	_	-	-		-	-	-	_	X	1	-	-	-	_	_
CCB	1.00	1601		-		-	-	-	_	-	-	-	-	-	-	-	-	-1	-	-	x	-	-	-	-	-	
MFGZ66D	1.00	1606				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	_	-	-	-		_
MFGZ66DA	1.00	1610	98.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	$ \neg $	-	-	X	-	_	-		-	_
MFGZ66S	1.00	1615	 -	-	-	-	-	-		-	-			-	-	-		-	-	-	x	-			-		_
MFGZ66SA	1.00	1619	94.0	-	-		-	-		-	-	-	-	-		-	-	-	-	-	X	-	-	 	-	-	•••
PBS	1.00	1624		-	-	-	-	-		-[-		-	-	-			-	X	 	-	-	-	-	
PBSA	1.00	1628	107.0	-	_	-	_	-}	-1	-			-		-1	-	-		-	-	X	-		-			
LCSS	10.00	1633		-	-	-	-		-	-	-		-		-	—	-	-	-	-	X	-				-	_
LCSSA	10.00	1637	83.0	-	-	-	-	-	-	-	-		-	-	_	—		-	_	-	X	-		-	-	-	_
CCV	1.00	1642	050	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	x	-	-	-	-		
CCB	1.00	1646		-	-	-	-	-	-	-		-	-	-			<u> </u>	-		-	X	 	 –	1-	-	-	_
		1040		-	_	<u> </u>	-	-	-	-	-		-		—	_	-		-	 –	1	-	-		-	-	_
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FORM XIV - IN

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U.S. EPA - CLP

14 ANALYSIS RUN LOG

Lab Name: ANALYTICAL_RESOURCES_INC. Contract: 68D50134___

Lab Code: ARI___ Case No.: 25159_ SAS No.: ____ SDG No.:MFGZ66

Instrument ID Number: BUCK MERCURY Method: CV

Start Date: 12/04/96

End Date: 12/04/96

ED3														Ar	na.	Lyt	e	3										_
EPA. Sample	D/F	Time	ہ ا	R	A	C	Α	<u></u>	В	C	~	C		C	5	T 2	18	М	127	N	K	-	A	N	T	V	Z	۲,
No.	D/F	TTITE	**	R	L	S B	S	A	E	ם	CA	R	C	ט	E	P B	M G	N	H G	I	T.	S	G	A	L		N	
10.					1"	5	٦	^	15	ם	7	I	lٽ	٦	"	ם	٦	14	9	1		1	٦	7	~		1,	ľ
S0	1.00	1338			-		-	-	_	—		-	-	-	-	_	-	_	$\bar{\mathbf{x}}$			-	-	 	-	-	-	-
50.2	1.00	1340			-	-;	-		-	_	_	-	-	-	-	-	-	-	х		_	_	-	-	-	-	-	-
S0.5	1.00	1342			-	-	-	-	-	-	_	_		-	-	_	-	-	Х	-			-	-	-	-	_	-
S1.	1.00	1343			-	-	-	-	_		_	-	-	-	-	-	_	_	X	-	-	_	-	_	-	_	_	-
S5	1.00	1346			-	_	_	_	-	-	_	-	_	-	-	-	_		x	_		_	_		_	-	-	-
S10	1.00	1347			-	_	_	-			_	-	_	-	_	-		_	x			_	_	_	_	-	-	~
ICV	1.00	1351			-	-	-	-	-		-1	-	_	-	_	_	_	_	х	-	_		_		_	-	-	-
ICB	1.00	1353	-		-	_	_	_	-	_	_	-	-	-	_	_	_		х	-	-	_	_	_	_			-
ccv	1.00	1354			-	_			-	_	_	-	-	-		-	1	_	Х	_	_	_	_	_		_	-	-
CCB	1.00	1356	-		-	-		_		_	-		-		-	-	-	-	X	_	_	_	_		-		_	-
CRA	1.00	1358				-	_	_		-		_	-	-	-	_			х	_	_	_	_	_	-		_	-
ZZZZZZ	1.00	1400			-	_	_	_	_	-	_			_		_	-	_		_		_	_	_	_	-	_	ľ
ZZZZZZ	5.00	1402			-	-	_	_	-	-	-	_	_	_		-	_	_	-	_	-	_	_	_	_	-	_	-
ZZZZZZ	1.00	1405			-		_		_	_	_	_	_	_	_	_	_	_	-	_	_	_	_	-	_	-		-
ZZZZZZ	1.00	1406			1-		_	_	-	_	_	_	-	_	_		_	_	-	_	_	_	_	_	_	-	_	~
ZZZZZZ	1.00	1408			-	-	_	_	-	_	-	-			_	-	-	-	-	_	_	1	_	_	_	-	_	-
ZZZZZZ	1.00	1421			-	_			_	-	_	-	-		_	-	_		_	_	-	_	_	_	_			-
ZZZZZZ	1.00	1423			-	_	_		_	_	_	_	-	-	_	_	_				_	_	-		_	-		_
ZZZZZZ	1.00	1425			1	_	_		_	_	_	_	-	-	_	-	-		_		-:	_			_	-	_	-
ZZZZZZ	1.00	1427			-			-		_			_	-		_	_	-	_	-	_	_		-	_	-	_	-
CCV —	1.00	1429			-	_	_		-	_	_	_	-	-	_		-	-	X	_	_	_	_		_	1	_	[
CCB	1.00	1431				_	_	_	_	_	_	-	-	i-	_		_	_	Х	_	-	_						Ľ
CCV	1.00	1442			I	_	_	_				_	_		_		_	_	Х	_	_						I	
CCB	1.00	1444			<u> </u>									<u> </u>			_		Х	_			Ι_		I_		I	
ZZZZZZ	1.00	1447					_		_												_							
ZZZZZZ	1.00	1449						_	_		_	_	_	-	_	_	-	_		_		_			l_			
ZZZZZZ	1.00	1451							_			_				-				_							_	
ZZZZZZ	1.00	1453											_				_								<u> </u>		l <u> </u>	
ZZZZZZ	1.00	1455			I_	_				<u> </u>	_		_		I_	<u> </u>	I_		l_	<u> </u>	l	<u> </u>	I_	I_	I_	I_{-}^{-}	I_	
ZZZZZZ_	1.00	1457									_	_			l			_									I_	
ZZZZZZ	1.00	1459						_							[I	_	_	_	_		Ι_						[
ZZZZZZ	1.00	1501								_						<u> </u>	l_	_		[_								
						-	-		-	_	-	-	 	-	-	_	l –	I —	١	Ι-	I —	I —	-	1-	I^-	Ι_	۱_	Γ

FORM XIV - IN

900055 ILM04.0

BHOILITAT

Standardization	Rpt	•

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page

			4-	5 ¥ =			
Method:	ICPCLP1	Standar	d: STD1-B]	lank			
Elem	AG	AL	AS	B	8A	BE	CA
Avge	0390	.4552	.0676	.0229	.0019	.0929	.0371
SDev	.0041	.0266	.0216	.0029	.0008	.0014	.0029
%RSD	10.56	5.832	31.99	12.50	43.30	1.538	- 7.692
#1 #2 #3	0343 0414 0414	.4429 .4857 .4371	.0429 	.0257 0200 	.0029 .0014 .0014	.0914 .0943 .0929	.0400 .0371 .0343
Elem Avge SDev %RSD	CD .0205 .0030 14.52	C0 .0067 .0030 44.61	CR .0071 .0014 20.00	.0486 .0029 5.882	FE _0195 _0109 55.89	K - 1552 - 0246 15.84	MG .0048 .0060
#1	.0229	.0057	.0071	.0486	.0171	1271	.0029
#2	.0214	.0100	.0057	.0514		1657	.0114
#3	.0171	.0043	.0086	.0457		1729	.0000
Elem	MN	M0	NA	NI	PB		SE
Avge	.0019	.0029	.5867	- 0686	.0129		.0238
SDev	.0008	.0029	.0208	- 0029	.0124		.0060
%RSD	43.30	100.0	3.548	4 167	96.86		24.98
#1	.0014	.0000	.6100	0714	.0071	.0543	.0171
#2	.0029	.0029	.5700	0657	.0043	.0614	
#3	.0014	.0057	.5800	0686	.0271	.0486	
Elem Avge SDev %RSD	SI .1529 .0043 .2.804	SN 	SR .0629 .0000	7I .0129 .0000	TL 0886 .0311 35.15	V 0248 .0064 26.01	ZN .0119 .0008 6.928
#1	.1571	0029	.0629	.0129	1029	0243	.0114
#2	.1529	0029		0129	0529	0186	.0114
#3	.1486	0100		.0129	-:1100	0314	.0129

@pagesp 60,111/97

1323 PA oiling

Standard	dization	Rpt.	··· 5	Sun	12-15-96 0	1-28:45 PM	page
Method:	ICPCLP1	Stanc	lard: STD2			,	ut .m.
Elem Avge SDev %RSD	8A 52.48 .16 .3103	23.67	CD 55.15 13 _2424	25.29	16.91 .05	CU 61.41 .22 .3653	
#1 #2 #3	52.66 52.44 52.35	23.74 23.68 23.60	55.28 55.16 .55.01		16.95 16.92 16.86	- 61.41	30.17 30.13 30.01
Elem Avge SDev %RSD	v 63.46 .32 .5100			· Dell ·	· . ·	· · · · · · · · · · · · · · · · · · ·	
#1 #2 #3	63.76 63.50 63.12		= -				

000081 01/17/97

Pato1/11/97

Standard	dization Ret.	S	0un 12-15-96 0 1:33: 03	PM Page
Method:	ICPCLP1 Standard	STD5		-:
Elem Avge SDev %RSD	K 12.77 .05			
#1 #2 #3	14.74			

000082

BH 1197

BA01/17/97

Standar	dization	Rpt.	a a S.	Sun	12-15-96	01 -37 :42	2 PM	page
Method:	ICPCLP1	Stand	ard: STD4					
Elem	МО	SB	SI	SN	ŢĪ,			
Avge	21.28	18.06	28 68	10.81	55 <i>-77</i>	-	_	
SDev	.03	."11 .	18		.37			
%RSD	.1622	.5859	.6345			· ·		
#1	21.32	18.16	28 88	1085	56,19			
#2	21.25	18.06	28.61	10.80	55.61		_	
#3	21.28	17.95	28.54	-	55-51			. <u>.</u> .

000083 At 11/97

fsto:1/1/97

Standar	dization Rp	t.	5	Sun	12-15-96	1337 0 1:42: 43 PM	page _
Method:	ICPCLP1	Standar	d: STD3		·. :.		<u></u>
Elem Avge SDev %RSD	.011	.29.52 .11	AS 10.50 .07 .6696	24.35 .14	166.4 .6	24.87	MG 7.388 .028 .3781
#1 #2 #3	3.346_	29 . 59	10.43 10.57 10.51	24.40	%166.8	24.78 . 24.90 24.94	7.380 7.419 7.364
Elem Avge SDev %RSD	NA 44.83 .16 .3617	52.41	PB 13.43 .04 .3057	7.482 .027		10.86 .06	7014
#1 #2 #3	44.65 44.97 44.86	52.64	13.40 13.41 13.47	7.509	48.47 48.82 48.80	10.91	9.830 9.843 9.859

000084 (m) 1/97

SAMPLE	CONC	ZRSD	MEAN ARS	READINGE
gcblank gc <i>ccl</i> 3	0.2	-34 . 8	p,001	0.001 0.000 1 175ep96 14:24 ARS = 0.003
BLANK GC <i>SO</i>	0.0		0.004	0.004 . 70.004 llllllllllllllllllllllllllllllllll
RESLOPE 3 GC <i>520</i>	20.0	7.4	0.053	0.054 0.052 17Sep96 14:36
OCSTANDARD OC OCU 4	38.6	0.5	0.102	0.101
GCBLANK GC <i>CCB</i> 4	0.1	21.2 ⁻	0.000	01000
5374 A 5	-12.6	. 24.2	-0.054-	17Sep96 14:47 ABS = 0.004 0.030 0.042 0.042 17Sep96 14:52 17Sep96 14:52 17Sep96 14:52 17Sep96 14:52
-acsfike ac	- 22, 6-	10.8 .	-0.050	0.054 0.063 0.063 17Sep56 14:58
5374 ADUP 5 DC MF4Z64P		ા. આગાવ	.0.067	0.067 0.066 0.05 0.05 0.05 0.05 0.05 0.05 0.0
gcspike gc MFGZL GA	41.4	2.1 N	0.109	0.107 0.111 17Seb94 15:09 %R = 80.8 %R FAILED, REPEAT BY STANDARD ADDITIONS
CCU 5	39.1	1.4	01103 .	0.1020.104 175eo96 15:14
CCB 5 GCPIRE GC	0.4	19.7	_0.001	0_001
BLANK SO	0.0	- 발크	-0.001	-0.001 -0.002 17Sep96 15:27
QCSTANDARD QC 570 CCV (37.5	. 1.7	0.079	0.100 0.098 17Sep96 15:33 %R = 93.7
GCBLANK GC <i>CCBC</i>	0.2 A	_32 . 3	0.001	0.001 0.000 175ep96 15:38 ABS = 100.004
5374 ADUP 10 GC	14,5-	- 1 7 - 2	-0.050-	0.036 0.044 Mrs 3 17Sep 6 0.5:43 Conc. = 15.7ps
GC	- 23.8	- 10,5 - 11	-0.063	0.058 0.068 0
	, .		- , ,	BHOILITIGI PAGESS

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UNITED STATES ENVIRONMENTAL PROTECTION_AGENCY

REGION 6

HOUSTON BRANCH 10625 FALLSTONE ROAD HOUSTON, TEXAS 77099

RESUBMITTED DATA REVIEW REPORT

DATE	:	<u>January 24, 1997</u>	CASE #:	25159
			SAS # : _	· <u></u>
TO:		L. Biasco	SDG # :	FFG24
		(6SF-RA)	LAB :	AATS
FROM	:	Maria Missler	- SITE :	Wilcox Oil
		(LMSG)		
		ESAT - Region 6	TDF # :	
			ESAT #:	0-1787

EFFECTS OF RESUBMITTED INFORMATION ON THE ORIGINAL DATA:

Laboratory response to Region 6 FAX request: (received 1/17/97)

A. VOA

1. Method blank VBLK3: The laboratory revised and resubmitted Form I VOA-TIC. Please replace page 138 with the resubmitted one.

B. Pest/PCB

- 1. The laboratory corrected and resubmitted Forms VI PEST-2.
 Please replace pages 397 and 398 with the resubmitted ones.
- 2. The laboratory corrected and resubmitted Forms VII PEST-1 and PEST-2. Please replace pages 406-411 with the resubmitted ones.

Please ignore resubmitted pages 470, 471, 474, and 475 as the reviewer did not request them.

16 January, 1997

To:

Mr. Mahmoud El-Feky
U.S. EPA Region 6 Laboratory
10625 Fallstone Road
Houston, TX 77099

MM

From:

Laboratory Name: SWOK

iboluloiy ituino. Bit on

Lab Contact:

Harry Borg

Region:

6

Regional Contact: Maria Missler

In Reference to CASE No. 25159 SDG: FFG24

The Unknown compound has been added to TIC Form 1, pg. 138.

1E VOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA	SAMPLE	NO.

b Name: SWL-TULSA		Contract:	: 68-D5-0022	VBLK3
Lab Code: AATS	Case No.: 25159	SĀS No.:	: SDG	No.: FFG24
Matrix: (soil/water)	WATER	-	Lab Sample ID:	L961126A
Sample wt/vol: 5.0	(g/mL) ML	- 92 -	Lab File ID:	L23525.D
Level: (low/med)	LOW		Date Received:	7 /
% Moisture: not dec.	<u> </u>		Date Analyzed:	11/26/96
GC Column:DB-624	ID: 0.53 (mm)		Dilution Facto	or: 1.0
Soil Extract Volume:	(uL)	. <u>.</u> .	Soil Aliquot V	Volume:(uL
		CONTCEN	monutar interes.	

Number TICs	found: Ø	1710/47	(ug/L or	
				

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q =====
1.	UNKNOWN	12.190		T_
3				
5				
7				
9.				
10.				
13. 14.				
15. 16.				
17. 18.				
19				
20. 21. 22.				
23. 24.				
25. 26.				
27. 28.				
29. 30.				

FORM I VOA-TIC

OLM03

RESPONSE TO REGION REQUEST

DATE:

January 14, 1997

TO:

Maria Missler -- ESAT/Lockheed

FROM:

Vicki L. Hall -- Southwest Laboratory of Oklahoma, Inc.

RE:

Case 25159, SDG: FFG24

Pest/PCB:

RESPONSE 1:

The form VI PEST-2 have been corrected and resubmitted.

RESPONSE 2:

The forms VII PEST-1 and VII PEST-2 have been corrected and resubmitted.

All appropriate amendments are enclosed. If you have any further questions, please call me at (918) 251-2858.

6E
PESTICIDE INITIAL CALIBRATION OF SINGLE COMPONENT ANALYTES

Lab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG24

Instrument ID: HP 16A Level (x low): low 1.0 mid 4.0 high 16.0

GC Column: DB-1701 ID: 0.32(mm) Date(s) Analyzed: 12/02/96 12/02/96

		CALIBRATIO	ON FACTORS		
COMPOUND	LOW	MID	HIGH .	MEAN	%RSD
-1	15004400	10500500		10065050	=====
alpha-BHC	17804400	18590700			6.5
beta-BHC	12695600	11328500		11517425	
delta-BHC	16002800	16857100		17246108	
gamma-BHC (Lindane)	17711200	17913600		17903692	1.0
Heptachlor	18478400	16293600	– –		13.0
Aldrin	18326800	18787900		19348167	7.2
Heptachlor epoxide	18826800	18201800	19107425	18712008	2.5
Endosulfan I	17089600	16887200	16983600	16986800	0.6
Dieldrin	15963400	16918250	17492675	16791442	4.6
4,4'-DDE	16293000	17954050	19385325	17877458	8.7
Endrin	12516200	13143400	13201463	12953688	2.9
Endosulfan II	15326600	15323450	16305413	15651821	3.6
4,4'-DDD	12116800	13139200	12914463	12723488	4.2
Endosulfan sulfate	14367600	14530700	14704700	14534333	1.2
4,4'-DDT	10372400	10540600	9598113	10170371	4.9
Methoxychlor	5502080	4842570	4288588	4877746	12.5
Endrin ketone	15022200	15877800	16060425	15653475	3.5
Endrin aldehyde	12106200	13400850	13642588	13049879	6.3
alpha-Chlordane	18630000	17910700	18195325	18245342	2.0
gamma-Chlordane	19303600	18449900	19042825	18932108	2.3
=====================================		=======	======	========	
Tetrachloro-m-xylene	20031200	19294700	18550025	19291975	3.8
Decachlorobiphenyl	21137800	18865800	16254263	18752621	13.0
	,		· ————		. ———)

^{*} Surrogate calibration factors are measured from Standard Mix A analyses.

6E

PESTICIDE INITIAL CALIBRATION OF SINGLE COMPONENT ANALYTES

Lab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG24

Instrument ID: HP_16B Level (x low): low 1.0 mid 4.0 high 16.0

GC Column: DB-17 ID: 0.32(mm) Date(s) Analyzed: 12/02/96 12/02/96

		CALIBRATIO	ON FACTORS		
COMPOUND	LOW	MID	HIGH	MEAN	%RSD
alpha-BHC	13567600	14215800	15820825	14534742	8.0
beta-BHC	8778400	8370200	8003200	8383933	4.6
delta-BHC	12332400	12466900	13862850	12887383	6.6
gamma-BHC (Lindane)	13163200	13143300	13506650	13271050	1.5
Heptachlor -	13458800	11766700	10242425	11822642	13.6
Aldrin	14136000	14854100	17340175	15443425	10.9
Heptachlor epoxide	14519600	13832500	14759775	14370625	3.3
Endosulfan I	12994000	12876100	13352775	13074292	1.9
Dieldrin	11782800	12169400	12651888	12201363	3.6
4,4'-DDE	11944600	13416200	15611763	13657521	13.5
Endrin	8451800	8538650	8580088	8523513	0.8
Endosulfan II	12171000	12113000	12819275	12367758	3.2
4,4'-DDD	8691800	8876800	8866075	8811558	1.2
Endosulfan sulfate	11163800	11273500	11830525	11422608	3.1
4,4'-DDT	8179200	7966950	7578275	7908142	3.9
Methoxychlor	4613560	4115780	3474218	4067853	14.0
Endrin ketone	12554200	12838100	12953225	12781842	1.6
Endrin aldehyde	11459800	10697500	10358075	10838458	5.2
alpha-Chlordane	15329600	14507900	15240800	15026100	3.0
gamma-Chlordane	15680800	14862000	15809850	15450883	3.3
Tetrachloro-m-xylene	15190000	14979800	14698625	14956142	1.6
Decachlorobiphenyl	18757400	16637800	14544713	16646638	12.7
				·	l

^{*} Surrogate calibration factors are measured from Standard Mix A analyses.

7E PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG24

GC Column: DB-1701 ID: 0.32(mm) Init. Calib Date(s): 12/02/96 12/02/96

EPA Sample No. (PIBLK): PIBLK16Q Date Analyzed: 12/02/96

Lab Sample ID (PIBLK): 5-266-1616Q Time Analyzed: 1546

EPA Sample No.(INDA): INDAM16M Date Analyzed: 12/02/96

Lab Sample ID (INDA): 5-261-1616M Time Analyzed: 1616

INDIVIDUAL MIX A COMPOUND	RT	RT W. FROM	WODNI OT	CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
alpha-BHC gamma-BHC (Lindane) Heptachlor Endosulfan I Dieldrin Endrin 4,4'-DDD 4,4'-DDT Methoxychlor Tetrachloro-m-xylene Decachlorobiphenyl	9.27 10.08 10.46 12.82 13.50 13.89 14.56 14.86 16.04 7.40 19.57	9.23 10.03 10.41 12.76 13.43 13.82 14.49 14.79 15.97 7.35 19.47	9.33 10.13 10.51 12.90 13.57 13.96 14.63 14.93 16.11 7.45 19.67	0.011 0.011 0.010 0.010 0.021 0.021 0.021 0.020 0.101 0.010	0.010 0.010 0.010 0.010 0.020 0.020 0.020 0.020 0.100 0.010	5.0 5.7 3.8 1.9 3.8 4.3 3.8 0.7 0.9 4.2 -2.0
	l					

EPA Sample No.(INDB): INDBM16M Date Analyzed: 12/02/96

Lab Sample ID (INDB): 5-264-1616M Time Analyzed: 1646

INDIVIDUAL MIX B COMPOUND	R T	RT W.	NDOW TO	CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
beta-BHC delta-BHC Aldrin Heptachlor epoxide 4,4'-DDE Endosulfan II Endosulfan sulfate Endrin ketone Endrin aldehyde alpha-Chlordane gamma-Chlordane Tetrachloro-m-xylene Decachlorobiphenyl	11.50 11.95 10.98 12.32 13.14 14.75 16.20 17.12 15.54 13.04 12.90 7.40 19.56	11.45 11.90 10.93 12.25 13.07 14.69 16.13 17.06 15.48 12.97 12.83 7.35	11.55 12.00 11.03 12.39 13.21 14.83 16.27 17.20 15.62 13.11 12.97 7.45 19.67	0.011 0.011 0.011 0.011 0.022 0.022 0.022 0.022 0.021 0.011 0.011	0.010 0.010 0.010 0.010 0.020 0.020 0.020 0.020 0.010 0.010 0.010	10.1 11.1 9.7 9.2 10.4 12.9 9.6 9.4 3.4 9.5 9.0 11.4

7E PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG24

GC Column: DB-17 ID: 0.32(mm) Init. Calib Date(s): 12/02/96 12/02/96

EPA Sample No.(PIBLK): PIBLK16Q Date Analyzed: 12/02/96

Lab Sample ID (PIBLK): 5-266-1616Q Time Analyzed: 1546

EPA Sample No.(INDA): INDAM16M Date Analyzed: 12/02/96

Lab Sample ID (INDA): 5-261-1616M Time Analyzed: 1616

INDIVIDUAL MIX A		RT W	INDOW	CALC	NOM	
COMPOUND	RT	FROM	TO.	AMOUNT	AMOUNT	%D
•				(ng)	(ng)	
_====::::::::::::::::::::::::::::::::::	======		=====	=======	=======	=====
alpha-BHC	9.58	9.53	9.63	0.010	0.010	4.6
gamma-BHC (Lindane)	10.43	10.38	10.48	0.011	0.010	5.9
Heptachlor	11.12	11.07	11.17	0.011	0.010	10.9
Endosulfan I	13.65	13.58	13.72	0.010	0.010	-1.0
Dieldrin	14.25	14.18	14.32	0.021	0.020	3.1
Endrin	14.98	14.91	15.05	0.021	0.020	3.7
4,4'-DDD	15.09	15.02	15.16	0.021	0.020	4.3
4,4'-DDT	15.72	15.65	15.79	0.020	0.020	-2.5
Methoxychlor	17.86	17.79	17.93	0.100	0.100	0.1
Tetrachloro-m-xylene	8.03	7.98	8.08	0.010	0.010	2.5
Decachlorobiphenyl	22.91	22.82	23.02	0.019	0.020	-3.5
	<u> </u>	l				

EPA Sample No.(INDB): INDBM16M Date Analyzed: 12/02/96

Lab Sample ID (INDB): 5-264-1616M Time Analyzed: 1646

INDIVIDUAL MIX B COMPOUND	RT	RT W3 FROM	TO TO	CALC AMOUNT	MOM Truuoma	%D
				(ng)	(ng)	
beta-BHC	10.57	10.52	10.62	0.011	0.010	12.5
delta-BHC	11.35	11.29	11.39	0.011	0.010	10.2
Aldrin	11.82	11.77	11.87	0.011	0.010	7.0
Heptachlor epoxide	12.94	12.87	13.01	0.011	0.010	7.5
4,4'-DDE	14.01	13.94	14.08	0.022	0.020	8.7
Endosulfan II	15.33	15.26	15.40	0.021	0.020	6.5
Endosulfan sulfate	16.30	16.23	16.37	0.021	0.020	7.1
Endrin ketone	18.46	18.39	18.53	0.022	0.020	7.4
Endrin aldehyde	16.02	15.95	16.09	0.021	0.020	6.5
alpha-Chlordane	13.57	13.50	13.64	0.011	0.010	5.7
gamma-Chlordane	13.26	13.19	13.33	0.011	0.010	6.2
Tetrachloro-m-xylene	8.03	7.98	8.08	0.011	0.010	9.6
Decachlorobiphenyl	22.91	22.82	23.02	0.021	0.020	5.9
	l				l	[

PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.:

- SDG No.: FFG24

GC Column: DB-1701 ID: 0.32(mm) Init. Calib Date(s): 12/02/96 12/02/96

EPA Sample No.(PIBLK):

Date Analyzed:

Lab Sample ID (PIBLK):

Time Analyzed:

EPA Sample No. (PEM): PEM16K

Date Analyzed: 12/01/96

Lab Sample ID (PEM): 5-312-1616K

Time Analyzed: 2247

PEM	T	RT WINDOW		CALC	NOM	
COMPOUND	RT	FROM	TO	AMOUNT	AMOUNT	%D
)		(ng)	(ng)	
	- =====	_=====	=====			====
alpha-BHC	9.28	9.23	9.33	0.005	0.005	-1.8
beta-BHC	11.50	11.45	11.55	0.005	0.005	-3.2
gamma-BHC (Lindane)	10.09	10.03	10.13	0.005	0.005	-2.7
Endrin	13.90	13.82	13.96	0.025	0.025	0.5
4,4'-DDT	14.86	14.79	14.93	0.042	0.050	-15.6
Methoxychlor	16.05	15.97	16.11	0.113	0.125	-9.5
	-1					

4,4'-DDT % breakdown (1): 0.0

Endrin % breakdown (1):

Combined % breakdown (1):

0.0

7D PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG24

GC Column: DB-1701 ID: 0.32(mm) Init. Calib Date(s): 12/02/96 12/02/96

EPA Sample No.(PIBLK): PIBLK16P Date Analyzed: 12/02/96

Lab Sample ID (PIBLK): 5-266-1616P Time Analyzed: 0546

EPA Sample No.(PEM): PEM16L Date Analyzed: 12/02/96

Lab Sample ID (PEM): 5-312-1616L Time Analyzed: 0616

PEM COMPOUND	RT	FROM	WOOM TO	CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
alpha-BHC beta-BHC gamma-BHC (Lindane) Endrin 4,4'-DDT Methoxychlor	9.28	9.23	9.33	0.005	0.005	0.0
	11.50	11.45	11.55	0.005	0.005	2.3
	10.08	10.03	10.13	0.005	0.005	1.7
	13.89	13.82	13.96	0.027	0.025	7.3
	14.86	14.79	14.93	0.045	0.050	-9.5
	16.04	15.97	16.11	0.120	0.125	-3.4

4,4'-DDT % breakdown (1): 2.9 - Endrin % breakdown (1): 0.0

Combined % breakdown (1): 2.9

PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG24

GC Column: DB-17 ID: 0.32(mm) Init. Calib Date(s): 12/02/96 12/02/96

EPA Sample No.(PIBLK): _____ Date Analyzed : ____

Lab Sample ID (PIBLK): _____ Time Analyzed:

EPA Sample No. (PEM): PEM16K Date Analyzed: 12/01/96

Lab Sample ID (PEM): 5-312-1616K Time Analyzed: 2247

PEM		RT W	ENDOW	CALC	NOM	
COMPOUND	RT	FROM	ТО	TRUDOMA	AMOUNT	%D
				(ng)	(ng)	
	=====	=====	=====	=======	======	=====
alpha-BHC	9.58	9.53	9.63	0.005	0.005	-2.6
beta-BHC	10.57	10.52	10.62	0.005	0.005	-0.1
gamma-BHC (Lindane)	10.43	10.38	10.48	0.005	0.005	-1.9
Endrin	14.98	14.91	15.05	0.025	0.025	-0.4
4,4'-DDT	15.72	15.65	15.79	0.046	0.050	-8.2
Methoxychlor	17.86	17.79	17.93	0.115	0.125	-7.7

4,4'-DDT % breakdown (1): 0.0

Endrin % breakdown (1): 0.0

Combined % breakdown (1): 0.0

7D PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG24

GC Column: DB-17 ID: 0.32(mm) Init. Calib Date(s): 12/02/96 12/02/96

EPA Sample No. (PIBLK): PIBLK16P Date Analyzed: 12/02/96

Lab Sample ID (PIBLK): 5-266-1616P Time Analyzed: 0546

EPA Sample No.(PEM): PEM16L Date Analyzed: 12/02/96

Lab Sample ID (PEM): 5-312-1616L Time Analyzed: 0616

PEM COMPOUND	RT	RT WI FROM	INDOW TO	CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
alpha-BHC beta-BHC gamma-BHC (Lindane) Endrin 4,4'-DDT Methoxychlor	9.58	9.53	9.63	0.005	0.005	-0.1
	10.57	10.52	10.62	0.005	0.005	7.6
	10.43	10.38	10.48	0.005	0.005	2.2
	14.97	14.91	15.05	0.026	0.025	4.1
	15.72	15.65	15.79	0.048	0.050	-3.4
	17.86	17.79	17.93	0.121	0.125	-2.8

4,4'-DDT % breakdown (1): 0.0 Endrin % breakdown (1): 0.0

Combined % breakdown (1): 0.0

Lab Name: SWL-TULSA Contract:	68-D5-0022	PIBL	K16P	
Lab Code: AATS Case No.: 25159 SAS No.:	·	No.: F	FG24	
Matrix: (soil/water) WATER	Lab Sample ID:	5-266	-1616P	
Sample wt/vol: (g/mL)	Lab File ID:			- ·
Moisture: decanted: (Y/N)				•
	Date Extracted			=-
Concentrated Extract Volume: (uL)	Date Analyzed:	12/02	/96	*** £
Injection Volume: 0.5(uL)	Dilution Facto	r:	1.0	
GPC Cleanup: (Y/N) N pH:	Sulfur Cleanup): (Y/N) N	
CAS NO. COMPOUND CONCEN	TRATION UNITS: or ug/Kg) UG/I	-	 Q	
319-84-6		0.050 0.050 0.050 0.050 0.050 0.050 0.050 0.10 0.1	טעטטטטטטטטטטטטטטטטטטטטטטטטטטטטטטטטטטטטט	

PESTICIDE ORGANICS ANALYSIS DATA SHEET

PIBLK16P

Contract: 68-D5-0022 Lab Name: SWL-TULSA SDG No.: FFG24 Lab Code: AATS Case No.: 25159 SAS No.: Lab Sample ID: 5-266-1616P Matrix: (soil/water) WATER Sample wt/vol: _____ (g/mL) Lab File ID: % Moisture: ____ decanted: (Y/N)___ Date Received: ____ Extraction: (SepF/Cont/Sonc) ____ Date Extracted:_____ Concentrated Extract Volume: _____(uL) Date Analyzed: 12/02/96 Dilution Factor: 1.0 Injection Volume: 0.5(uL) GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N CONCENTRATION UNITS: CAS NO. COMPOUND (ug/L or ug/Kg) UG/L _ Q 319-84-6----alpha-BHC_ 0.0501 0.050 0.050 U 0.050 U U 0.050 0.0501 Ū 0.050 Ŭ 0.050 U U 0.10 U 0.10 72-20-8-----Endrin 0.10 33213-65-9-----Endosulfan II 0.101 U 72-54-8-----4,4'-DDD U 0.10 1031-07-8-----Endosulfan sulfate U 0.10 U 0.10 0.50 U 0.10 U 0.10 U 0.0501 U 0.050 U 5.0 U 1.0 U 2.0 U 1.0 U 1.0 U 1.0 U 1.0 U 1.0

PIBLK16Q Contract: 68-D5-0022 Lab Name: SWL-TULSA Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG24 Lab Sample ID: 5-266-1616Q Matrix: (soil/water) WATER Sample wt/vol: _____ (g/mL) Lab File ID: % Moisture: ____ decanted: (Y/N)__ Date Received: ____ Extraction: (SepF/Cont/Sonc) ____ Date Extracted:____ Concentrated Extract Volume: (uL) Date Analyzed: 12/02/96 Dilution Factor: 1.0 Injection Volume: 0.5(uL) GPC Cleanup: (Y/N) N pH: ____ Sulfur Cleanup: (Y/N) N CONCENTRATION UNITS: CAS NO. COMPOUND (ug/L or ug/Kg) UG/L

· · · · · · · · · · · · · · · · · · ·		
319-84-6alpha-BHC	0.050	U
319-85-7beta-BHC	0.050	U
319-86-8delta-BHC	0.050	ប្រ
58-89-9gamma-BHC (Lindane)	0.050	U
76-44-8Heptachlor	0.050	u
309-00-2Aldrin	0.050	ប
1024-57-3Heptachlor epoxide	0.050	ប
959-98-8Endosulfan I	0.050	ប
60-57-1Dieldrin	0.10	ਹ∣
72-55-94,4'-DDE	0.10	υl
72-20-8Endrin	0.10	ן ט
33213-65-9Endosulfan II	0.10	ש
72-54-84,4'-DDD	0.10	ប
1031-07-8Endosulfan sulfate	0.10	וס
50-29-34,4'-DDT	0.10	ប∫
72-43-5Methoxychlor	0.50	יט
53494-70-5Endrin ketone	0.10	וס
7421-93-4Endrin aldehyde	0.10	υl
5103-71-9alpha-Chlordane	0.050	ט ו
5103-74-2gamma-Chlordane	0.050	וס
8001-35-2Toxaphene	5.0	U
12674-11-2Aroclor-1016	1.0	U
11104-28-2Aroclor-1221	2.0	ט
11141-16-5Aroclor-1232	1.0	ប
53469-21-9Aroclor-1242	1.0	υ
12672-29-6Aroclor-1248	1.0	
11097-69-1Aroclor-1254	1.0	
11096-82-5Aroclor-1260	1.0	ប
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PESTICIDE ORGANICS ANALYSIS DATA SHEET

Lab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG24

Matrix: (soil/water) WATER Lab Sample ID: 5-266-1616Q

Sample wt/vol: (g/mL) Lab File ID: ____

% Moisture: ____ decanted: (Y/N) ___ Date Received: ____

Extraction: (SepF/Cont/Sonc) ____ Date Extracted:____

Concentrated Extract Volume: ___ (uL) Date Analyzed: 12/02/96

Dilution Factor: 1.0 Injection Volume: 0.5(uL)

GPC Cleanup: (Y/N) N pH: ____ Sulfur Cleanup: (Y/N) N CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/L Q 0.050 0.050 0.050 319-84-6----alpha-BHC 319-84-6 BHC
319-85-7-----beta-BHC
319-86-8------delta-BHC
58-89-9------gamma-BHC (Lindane)
76-44-8-------Heptachlor U U 0.050 U 0.050 U 309-00-2-----Aldrin 0.050 U 1024-57-3-----Heptachlor epoxide 0.050 U 959-98-8-----Endosulfan I U 0.050 60-57-1------Dieldrin U 0.10 72-55-9-----4,4'-DDE 72-20-8-----Endrin 0.10 U 0.10 U 33213-65-9----Endosulfan II 0.10 U 72-54-8-----4,4'-DDD 1031-07-8-----Endosulfan sulfate 0.10 U 0.10 Ŭ 1031-07-8-----Endosulfan sulfate
50-29-3------4,4'-DDT
72-43-5------Methoxychlor
53494-70-5-----Endrin ketone
7421-93-4------Endrin aldehyde
5103-71-9-------alpha-Chlordane
5103-74-2------gamma-Chlordane
8001-35-2------Toxaphene
12674-11-2-------Aroclor-1016 0.10 U 0.50 U 0.10 U 0.10 U 0.050 U 0.050 U 5.0 U 1.0 U 11104-28-2-----Aroclor-1221 2.0 U 11141-16-5-----Aroclor-1232 1.0 U 53469-21-9-----Aroclor-1242 12672-29-6-----Aroclor-1248 1.0 U 1.01 U 11097-69-1-----Aroclor-1254 1.0 U 11096-82-5-----Aroclor-1260

SEPA United St	ates Environmental Protection Agency Contract Laboratory Program	& Chain of Custody (For Organic CLP Anal	epoπ Record ysis)	25159	
. Project Code Account Code	6 Roy F. Wester	4. Date Shipped Carrier		6. Matrix (Enter in Column A)	7. Preservative (Enter in Column D)
Regional Information	Sampler (Name) Eric Tute	Airbiil Number		Surface Water Ground Water	1. HCI 2. HNO3
Ion-Superfund Program	Sampler Signature Juk Jak 3. Purpose* Early Action Logo Team	5. Ship To AATS	SuiteC	3. Leachate 4. Field QC 5. Soll/Sediment	3! NaHSO4 4! H2SO4 5. loe only
Site Name Wilcox Oil	Lead CLEM Action PA FS	1900 West Albuny Broken Arrow, Ok (918) 251-2858	74012	6, Olf (High only) 7, Waste (High only) 8, Other (Specify	6, Other (Specify in Column D) N. Not
Site Spill ID Restow, OK Site Spill ID	FED SI O&M	ATTN: Hurry Borg		In Column A)	preserved
CLP Sample Numbers (from labels) A Matrix (from Box 6) Med Comp. Comp. A Med Comp. Comp. Grab	vative Trackir	nal Specific Station ng Number Location ng Numbers Identifier	H Mo/Day/ Year/Time Sample Collection	CLP Inorganio Sample No.	J Sampler Field QC Initials: B=Bank S=Spice D=Duplicate R=Rinsto PE=Perform D=Experior Total QC Sample
FFG06 5 L G	5 XXX 6-015	017-19 SEDØ	5 11/19/96 14	BO MF 6248	EcT —
FFGII 5 L G		037-39 5501	11/19/96 12	10 MFG753	ECT —
FF612 5 6		041-43 SSØZ		215 MFGZSY	ECT -
FFC13 5 1 6		045-47 5503		230 MFGZ55	FCT -
FF617 5 L 6		061-63 5507		105 MFGZS9	ECT -
FF618 5 2 6		5065-67 5508		IIS MFGZ60	ECT DIFFE 17
FF621 5 2 6		077-79 SS11		150 MFGZ63	ECT -
FF 609 5 L G		5029-31 SEO U8	11/19/96 1	020 MFG251	ECT -
FFGio 5 L 6	5 XXX 6-01	5033-35 SE009	11119196 1	105 MFG252	ECT -
FFG24 5 L G		089-91 SEO 18		SSS MFGZ 66	ECT -
hipment for Sase Page (2) Page (2) Page (2) Page (2) Page (3) Page (3) Page (4) Page	1 FFG 24	1 to 1	ures	Chain of Custody 8	Geal Number(s)
		CHAIN OF CUSTODY RECORD Ure) Relinquished by: (5	Nanatura)	Data / Time Description	I have d'Olerandarea
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Relinquished by: (Signature)	Date / Time Received by: (Signate	ure) Relinquished by: (S	Signature) (Date / Time Received	by: (Signature)
	Date / Time Received for Laborato	on/hy: Data / Time		tody seal intact? Y/N/no	
Relinquished by: (Signature)	Date / Time Received for Laborato (Signature)	ory by: Date / Time	Remarks is cus	iouy seal miacr? Y/IV/NO	ne

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EPA Form 9110-2

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*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

	%E	P			tates En Contract							&	Org Cha (Fo	anic in of r Org	Traffic Rep Custody R anic CLP Analysi	ort ecord s)	Cas	251	59		
	1. Project Cod	de -	Accou	nt Code		ł. Re	gior 6	1 NO.		pling C	vestur	4. Date :	Shippe	d Ca	rrier		1 (Matrix (Enter		(Ei	eservative nter in
ļ	Regional Infor	mation			S	amp	ler (Nan	18)	,		Airbill N	umber				1	in Colum 1. Surtac	e Water	1.	lumn D) HCI
	Site Name Wilcox City, State	Wilcox Oil y, State Site Spill ID riotow, OK 222				Pur	pos			ction CLEM A REM	Long-Term Action FS RD RA O&N	5. Ship	17 Br 69	ATS oo h oken 18)	lest Albuny , Arrow, OK 251-2858 Borg	Suite C 74012	5 6	3. Oil (Hi 7. Waste (High 3. Other	ate QC ediment	2, 3. 4. 5. 6.	HNO3 NaHSO4 H2SO4 Ice only Other (Specify in Column D) Not preserved
	CLP	Α	B Conc.: Low Med High	C Sample Type: Comp. Grab	D Preser vative (irom Box 7	NOA NO	AS	Pest/PCB	ysis High only ARO TOX		Regio Track or Te	F onal Specif dng Number ag Number	ic er s	w (y	Station Location Identifier	Mo Year Sa	H /Day/ /Time mple ection	CLP I San	I sponding norganic spie No.	J Sampler Initials	K Field QC Qualifier B=Blank S=Spake D=Dipficate R=Finsete PE=Perforn. Evol===================================
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3	riamiquianau	Inquished by: (Signature) Date / Time Received for Lab (Signature)					a)														

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EPA Form 9110-2

SEE REVERSE FOR ADDITIONAL STANDARD INSTRUCTIONS SEE REVERSE FOR PURPOSE CODE DEFINITIONS

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4. Field QC 5. Soll/Sedin 6. Oll (High	nent	4. H2SO4 5. Ice only 6. Other	v in	3. Pi			urly Action	Long-Term Action	3. 31	AT': Gaet III, .	٠, ٢	ivite!				!	ate ne	ceive	ıa —
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	(Enter in Column 1. Surface W 2. Ground W 3. Leachate 4. Field QC 5. Soll/Sedin 6. Oil (High only 8. Other (Sp in Column labels) CLP Sample Numbers (from labels) FF(72 Shipment for Complete? (Y 12 Shipment for Complete? (Y 13 Shipment for Complete? (Y 14 Shipment for Complete? (Y 15 Shipment for Complete)	(Enter in Column A) 1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 6. Soll/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (Specify in Column A) CLP Matrix (from labels) CLP Matrix (from labels) Cher (FF()) FF() FF() FF() Relinquished by: (Signature) Relinquished by: (Signature) Relinquished by: (Signature)	1. Matrix (Enter in Column A) 1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5. Soll/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (Specify in Column A) CLP Sample Numbers (from labels) CIP Sumple Numbers (from labels) CIP Sample (from labels) CIP Sample (from labels) CIP Sample (from labels) CIP Sample (from labels) CIP (1)	1. Matrix (Enter in Column A) 1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5. Soll/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (Specify in Column A) CLP Sample Numbers (from labels) CLP Sample Numbers (from labels) CIP Sample Numbers (from labels) CIP Sample Numbers (from labels) CIP Sample Numbers (from labels) CIP Sample Numbers (from labels) CIP Sample Numbers (from labels) CIP Sample Numbers (from labels) CIP Sample Numbers (from labels) CIP Sample Numbers (from labels) CIP Sample Sample Comp. If from Column D) N. Not preserved Comp. If Co	1. Matrix (Enter in Column A) 1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5 Soll/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (Specify in Column D) 8. Other (Specify in Column D) 8. Other (Specify in Column D) 8. Other (Specify in Column D) 8. Other (Specify in Column D) 8. Other (Specify in Column D) 8. Other (Specify in Column D) 8. Other (Specify in Column D) 8. Other (Specify in Column D) 9. Not preserved 9. Sample Preser-Type: vative Comp. (from Grab Box 2) 9. Other: 9. Other: 9. Sample Preser-Type: vative Comp. (from Grab Box 2) 9. Othe	1. Matrix (Enter in Column A) 1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5. Soll/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (Specify in Column D) 8. Other (S	1. Matrix (Enter in Column A) 1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5. Soll/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (Specify in Column D) 8. Other (Specify in Column D) 8. Other (Specify in Column D) 8. Other (Specify in Column D) 8. Other (Specify in Column D) 9. Not preserved 9. Sample RAS Analy 1. Lead Cont.: Specify in Column D) 1. High Grab Box 2) 1. FEC 1.2 1. G. XXX 1. FEC 1.1 2. Region No. Sampler (Name Column D) 1. HCI 2. HNO3 3. NaHSO4 4. H2SO4 5. Ice only 6. Other (Specify in Column D) 7. Not preserved 9. Sampler Signation 1. Lead Cont.: Specify in Column D) 1. Not preserved 1. FEB 2. Sample Preser RAS Analy 1. Type: Vative Comp. (Irom Box 2) 1. G. XXX 1. FEC 1.1 2. G. XXX 2. FEC 1.1 3. Purpose Box 1 3. Purpose Box 1 4. H2SO4 5. Ice only 6. Other (Specify in Column D) 7. Not preserved 1. FEB 2. Sample Sa	1. Matrix (Enter in Column A) 1. Surface Water 2. Ground Water 3. Leachate 4. H2SO4 5. Ice only 6. Oil (High only) 7. Waste (High only) 8. Other (Specify in Column A) 1. Surface Water 1. HCl 2. HNO3 3. NaHSO4 5. Ice only 6. Oil (High only) 8. Other (Specify in Column B) 8. Other	(Enter In Column A) 1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5. Soll/Sediment 6. Oil (High only) 7. Waste (Specify in Column A) 7. Not (Irom labels) 7. Not (Iro	1. Matrix (Enter In Column A) 1. Surface Water 2. Ground Water 2. Ground Water 3. Leachate 4. Field QC 4. H2SQ4 5. Soll/Sediment 6. Oil (High only) 7. Waste (Specify in Column D) 8. Other (Specify in Column D) 8. Other (Specify in Column D) 8. Other (Specify in Column D) 8. Other (Specify in Column D) 8. Other (Specify in Column D) 8. Other (Specify in Column D) 8. Other (Specify in Column D) 8. Other (Specify in Column D) 9. Other (Specify in Column D) 1. Not preserved ST SI OAM ATTN: (In Specific Tracking Numbers (from labels) 9. Other (Specify in Column D) 9. Other (Specify in Column D) 1. Sampler (Name) 9. Sample	1. Matrix (Enter In Column A) 1. Surface Water 2. Column D) 1. Surface Water 3. Leachate 3. NaHSO4 4. H2SO4 5. Soll/Soldiment 5. Oil (High only) 6. Other (Specilly In Column A) 7. Waste 8. Oil (High only) 1. Matrix 8. Oil (High only) 1. Matrix 1.	1. Matrix (Enter In Column A) 1. Surface Water 2. Claumn D) 1. Surface Water 3. NaHSO4 4. H2SO4 5. Solly Solly Solly In Column A) 6. Oil (High only) 6. Other (Specify In Column A) 7. Waste (High only) 6. Other (Specify In Column A) 7. Waste (High only) 7. Waste	1. Matrix Enter Column A Column B Co	1. Matrix (Enter In Column A) 1. Surface Water 2. HNO3 1. Surface Water 3. HNO3 3. Leachate 4. H2SO4 5. Boll/Sediment 6. Differ (Specify In Column A) 1. Matrix (Enter In Column A) 1. Surface Water 2. HNO3 3. Leachate 4. H2SO4 5. Boll/Sediment 6. Differ (Specify In Column A) 1. Waste Cone. Specify In Column B) 1. Col	1. Martix (Enter in Column A) 1. Surface Water 2. HN30 2. Preservative (Enter in Column D) 3. Surface Water 2. HN30 3. Leachate 4. H2904 4. H2904 6. Colled Gament 6. Colled Gament 7. Transfer to: Column D) 6. Oil (High only) 7. Transfer to: CIEM of the college of the c	1. Matrix (Enter	1. Matrix (Enter	1. Matrix (Enter in Column A) 1. Surface Water 2. Region No. Sampler (Name) 2. Ground Water 2. Ground Water 3. Next No. 3. Next No. 3. Next No. 4. Leachast 5. Sempler (Name) 3. Next No. 3. Next No. 4. Leachast 5. Sempler (Name) 4. Leachast 6. College (Name) 5. Surface Water 6. Leach 1. Leachast 7. Transfer to: Date Received by 1. Leachast 7. Transfer to: Date Received by 1. Leachast 7. Transfer to: Date Received by 1. Leachast 7. Transfer to: Date Received by 1. Leachast 7. 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Relinquished by:	: (Signati	ire)	Date	 	Ð	Rece (Sign	lived for Lab	poratory by:		11/	Pate / Time	Remarks Is	custody	seal Inta	ct? (Y/N/no	ne			
Relinquished by:	: (Signatu	ire)	Date	Tlm	9		lyed by: (S	ignature)		Relin	quished by: <i>(Si</i>	gnature)	Date	/ Time	Received	l by: <i>(</i> 5	Signatu	re)	
Relinquished by:	: (Signatu	ire)	Date	/ Time	e	1	ived by: (Si	ignature) // /////		Relino	quished by: <i>(Si</i> g	gnature)	Date	/ Time	Received	by: <i>(</i> 5	Signatui	re)	
()	<u> </u>	2 of 2		F	<i>F</i> 6	02		CHAIN	OF CUS	TODY	RECORD	<i>-</i>		<u> </u>					
Shipment for Cas Complete? (Y/N	50),	Page	Sampl	, .			r Laborator,	y QC	Additi	onal-S	ampler Signatu	res		Chain c	f Custody S	eal Nu	mber(s)	
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CLP M Sample (f	rom Lov	c.: Sample 	Preser- vative -		Analy 18		Re Tr	egional Spe racking Nun or Tag Numb	cific nber ers		Station Location Identifier	Mo/D Year/T Samp	ime	CLP	sponding Inorganic ople No.		ler Higi Is	h Pha	ises g
ن ب رسماده ان	A B	16	ום		E	Si X€si	<u> </u>	<u>(PLD) ^'</u> F		"(')	Buy G	1 11	Ш_		<u> </u>		'	K	
8, Other (Spec in Column A	cify N.	Not preserved	É	SF PRP ST FED		REI RI	F IR	ID IA ISAM	(9	18)	17:00, OK 251-2855	ı	Cont	ract Nun	nber	1	Price		
 Oil (High on 7. Waste (High only) 	ıiv) 6. (Other (Specify ir Column D,		Purpos		arty Action	EM Ación	erm S	Re	oben oken	lest Albuny Horaw, OK	74012	Rece	lved by					
3. Leachate 4, Field QC 5. Soil/Sedime	4.	NaHSO4 H2SO4 ce only		mpler	_	1	i Tut	5. Sh	71	475		こせい	7. Tr	ansfer to	i	E	Date Re	ceive	bd
1. Surface Wat 2. Ground Wat	er 2.1	HCI HNO3		E	نم درن	Tot	ų									1061	om Fir	U 0	
(Enter in Column A		(Enter in Column D))	mpler	/Nam	Yoy.	F. West	Airbill	Number				Laho	velon C	ontract Nun	hor II		18/	16
1. Matrix	2.	Preservati	ve 2.1	Region	n No.		ing Co.	4. Dat	(FO e Shippe	Car	inic CLP Analys ier	515)		te Rece	ived Rec	eived b	y:	,	,
⊗EI	PΔ	United Sta	tes Enviro ontract L	onmeni: aborato	al Prol	ection A	gency	{	& Chai	n of	Traffic Re Custody F nic CLP Analys	Record		:110. } < 1	ن مس				
									firm	anic	Traffic Da	nort	Case	s No.					

White - Lab Copy for Return to Region Yellow - Lab Copy for Return to CLASS

*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

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⇔ E	United States Environmental Protection Agency Contract Laboratory Program									Orga Chair (For	nic Traf I of Cus Organic Cl	ric He tody P Anak	eport Record	1	Case	つじ	153			
. Matrix (Enter		(E	eservat nter in_		2. Region		Sampling (co. Weston	4. Date S				y dia)		6. Da	te Receiv	ed Rec	eived by	11/19	196
in Column Surface W	ater	1. HC		"	Sampler	(Name,)	Medical	Alrbill Nu	mber							ntract Nun		init Prid	
. Ground W Leachate Field QC Soil/Sedin	į	4. H2	HSO4	- 1	Sampler	Signatu	24	Tat	5. Ship T		TS.	1),			7. Tra	insfer to:			ate Re	ceive
Oil (High of Waste (High only Other (Sp	оп іу) ')	6. Ot	her pecify i olumn E	n l	3. Purpos	SO* Earl	CLEM PA REM	Long-Term Action FS RD		- 1900 Br (- Zoda	West 1. ker 11 12) 251 - 8	W. OK W. OK	7401	<u>,</u>	Rece	ived by	····		<u></u>	<u>.</u>
in Column	A)		eserve	d	PRP ST FED		RI SI KESI	RA O&M NPLD	ATTN:	(91) <u>Hu</u>	justa. Eviluta	111	.		Conti	ract Numb	er	P	rice	
Sample Numbers (from	A Matrix (from Box 1)	B Conc.: Low Med High	C Sample Type: Comp./ Grab	Box 2	תותוח		igh nly	Trackii	F nal Specifi ng Numbe i Numbers	r) Lo	G station ocation entifier	1	H Mo/Da Year/Ti Sampl Collecti	ne e	CLP ir	l ponding lorganic ole No.	Sample Initials		Water- Miscible Liq.
iabeis)	O(IIGI.		بانو دانو	Other:	> "	A A	RO/ OX		<u> </u>		1 1		, 					— ,		Misso
FEOG FEII	5	<u></u>	G	<u>. ح</u>					017-1			<u> </u>		496 <u> </u>	12		1241 1271	ECT		
F 6 12	٠,	<u> </u>	_0			权	_		041-	-		301.2	-	3/26 9/96	171	.1 .		Eil		
FC13	7	1	6	_ _	$\nabla \nabla$	'\\(\)			015-			503	781-4	196	12:		(755	EC		
F6'17	3	1	6	3	XX	X		6-015	061-6	3	6		iii	9.14	14,0	£	(PC)	FOT		
EG18	3"	1	·6	5	$ \chi\rangle$	χ		6-01	5065-1	17	- 2	 	11/1	4/4	<u> 1971</u>	1.5	760	ECI		
FG 21	5		16.	<u></u>	X X	<u> </u> X _		6-019	077-1	79				1	<u>/i</u>	<u> 15</u>	1.74.3	ECT		
FC09	س،	1	6	$-\frac{A}{2}$	<u> </u> <u> </u> <u> </u>	X			2033.			O WY		176	100	11	(2-1	ECT		
FG10	1			_5_	<u> </u>	 X _			<u> 1035-</u>			EU/		416	1145		(75)	Err		
FG 24				کے۔	1 (1)	Y	od for La	6-013	<u> </u>	/ Additio	nal-Samplei	Signati		<u>9/97.</u>	1535	Chain of	Custody 9	F.T.		igsquare
pment for C mplete? (Y/	N)		of _2		iipie(s) k F	FG	24.	boratory QC		ه م	امارون کارونا	Olginar) /			Onam or	ouslouy t	JORI MUI	יין:	,
*	<u> </u>	Fil			<u>مات</u>				CHAIN O	F CUST	ODY RECO	ORD					_			
inquished b				D	ate / Time	e	Received	by: (Signat	ure)	[[Relinquished	iby: (S	Signalure)		Date /	Time	Received	by: (S	gnatur	e)
1	1/2	<u>_</u> -	į	11/10/	76 12	60	1/10	0.1		ļ		· 1	:				į.			1
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linquished k	oy: (Sig	nature	,	D	ate / Tim	8	Received (Signatur		,	1	Date / T	ime 9:00	Remark		ustody	seal Intac	I. ₹?(ŶÌN/no	ne		

White - Lab Copy for Return to Region

Yellow - Lab Copy for Return to CLASS

*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

CRGANIC DATA SUMMARY

Case No.:

25159

Note:

SDG:

FFG02

Reviewer:

M. Missler

Laboratory: AATS

Matrix:

SOIL

Unats:

ug/Kg

SEMIVOLATILES[FLAG_	FI	ag yeag	FLAG	FLAG		FLAG
EPA SAMPLE NUMBER:	FF-G08	FF-G09	FF-G09RE	•	FF-G11	FF-G12	FF-G13
Carbazole	46 J	460 U	460 U *	_ 400 D	410 U	410 U	_ 380_ប្
Di-n-butylphthalate	430 U	460 U	460 Ų ★	490 U	410 U	23 J	380 D
Fluoranthene	240 J	460 U	460 U *	400 U	410 U	68 J	380 0
Pyrene	170 J	49		_ 400 U -	410 U	.62 J	380 Ü
Butylbenzylphthalate	48 J	29 3		400 U	25 J	21 J	380 Ü 📜
3,3'-Dichlorobenzidine	430 U	460 U	460 Ū *	4.00 T	410 Ū	410 tī	. 380 U
Benzo (a) anthracene	430 U	460 U	. 460 T *	400 U		36 _. J	· - 380 T
Chrysene	96 J	49 J	44 *	400 U	410 T		380 Ū
bis(2-Ethylhexyl)phthalate	430 U	460 U	460 Ų *	400 T	410_0	_ 410 U_	_ 380 Å .
Di-n-octylphthalate	430 U	460 TJ		400 U	410 T	410 U	. 380 Ŭ
Benzo (b) fluoranthene	430 T	31 3	•	400 U	410 D	42 J	ัช 086
Benzo (k) fluoranthene	430 U	31 3	* 29 *	. 400 U	410 D	51. J	380 U
Benzo (a) pyrene	430 U	27 J		400 U	410 C	36 J	380 U
Indeno(1,2,3-cd)pyrene	430 U	460 W	-	400 U	_ 410 U	_ 410 U	380 U
Dibenz (a,h) anthracene	430 U	460 UJ	v .460 Ŭ *	400 U	€10 Ū	410 U	380 U
Benzo(g,h,i)perylene	430 U	460 U	v 460 Ŭ <u>*</u>	400 _. ೮	410 T	410 U	380 U
Sample wt (g):	30	30	30	_ 30	30 -	~30	30
%Moisture:	23	29	29	<u> </u>	. 19	20	14
Dilution Factor:	1	1	1	1	, 1	1	1_
Level:	LOW	LOW	TOM	LOW	FOM	FOM	LOW
Number of TIC's:	35	33	28	21	- 35	26	35

For the results listed in the Data Summary Table. ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

SDG: FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: - SOIL

Únits: ug/Kg

SEMIVOLATILES	FLAG	FLA	G	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G02	. FF-G03	`FF-G04	FF-G05	FF-G06	FF-G06RE	FF-G.7	
Phenol	1 400 T	390 U	420	U 410	บ 420	U * 420	UJ 440	
bis(2-Chlorocthyl)ether	400 U	390_U		U 410.				
2-Chlorophenol	400 U	. 390_U	. 42				UJv 440	
1,3-Dichlorobenzene	400 U	390 U	_ 420	U . 410	Ū420	U .* 420	UJv 440	ซ _
1,4-Dichlorobenzene	400 U	390 U .		J 410		U • 420		U
1,2-Dichlorobenzene	400 ℧	. 390 T	420	U 410	U420	Ŭ * 420	UJv 440	U
2-Methylpherol	400 U	390 U	420	-			UJV . 440	
2,2'-Oxybis(1-chloropropane)	400 U	390 U	420	_		-		
4-Methylphenol	400 U	. 390 U,	420	U 410	U 420	D • .420	UJv 440	Ū
N-Nitroso-di-n-propylamine Hexachloroethane	400 U	390 U	420				UJv 440	-
Nitrobenzene	400 U 400 U	390 U	420			U * .420		
RICIODENZENE	400 0	390 Ü	420	Ŭ - 410	U 420	U_ * 420	UJV - 440	U
Isophorone	400 U	390 U	420	Ŭ <u>410</u>	Ŭ 420	ช + 420.	UJv 440	ם
2-Nitrophenol	400 U	390 U .	420					υ .
2,4-Dimethylphenol	400 U	390 U .	. 420	U 410	U . 420	Ü + 420	UJy 440	U
bis(2-Chloroethoxy)methane	400 T	390 T	420					σ.
2.4-Dichlorophenol	400 U	390 U	420 1					_
1,2,4-Trichlorobenzene	400 T	390 .U	27	J 410	U 420	U. * 420	UJv 440	ס
Naphthalene	400 U	390 0	420_1	U 410	Ū -∷ 420	0 - 120	UJv 440	U
4-Chloroaniline	400 U	_ 390 U	_ 420 l					Ů, _
Hexachlorobutadiene	400 U	390_U	_ 420 1	U 410	U 420	U *4.20_	UJv _ 440	ប
4-Chloro-3-methylphenol	400 U	390 U	34	J410	បី 420 ំ1	Ū + 420	UJv — 440	υ
2-Methylnaphthalene	400. IJ	390 U	420 1		J 420	Ŭ * 420 °	UĴv 440	י ט
Hexachlorocyclopentadiene	400 U	390 U	. 420 1	U 410	Ū 420 ¹	U. * 420.	UJV440 '	ע
2,4,6-Trichlorophenol	400 U	~ 390 T	420 1	Ü 410	ŭ <u>420</u> 1	U * 420	UJv 440	
2,4,5-Trichlorophenol	1000 U	990 U	1000 (U 1000	U 1100 1	U + 1100	UJv 1100	U_
2-Chloronaphthalene	400 U	390 T	420 T	U 410	Ŭ 420 1	U * 420	UJv 440	U
2-Nitroaniline	1000 U	990 U	1000	1000	U1100_	U + 1100	UJv 1100	υ
Dimethylphthalate	400 T	390 U .	420	U . 410	U 420	U * 420	UJv 440	U
Acenaphthylene	400 U	390 U.	420 1	U _ 410	U 420	U * . 420	ÚJv 440	"
2,6-Dinitrotoluene	400 U	390 U	420 _1	U410	Ü - 420	U 420	UJv - 440	U
3-Nitroaniline	1000 U	990 U	. 1000.1					
Acenaphthene	400 U	390 U	32 -	J 22	J _ 420	U • 42.0	UJv 440	Ū.
2.4-Dinitrophenol	1000 A	990 T	1000	U 1000	U 1100	U. * 1100	UJV 1100	υ.
4-Nitrophenol	1000 T	990 U	1000 1					
Dibenzofuran	400 U _	390 U	420	U _ 410	Ū 420	T * 420	UJv 440	U
2,4-Dinitrotoluene	400 T	390 U	420 1	U 410	U 420	U + 420	₩ 440	U .
Diethylphthalate	400 U	390 U _	420			บ + 420	UJv 440	σ.
4-Chlorophenyl-phenylether	400 U	390 U	420	Ü410	U 420	ປ + 420	.ÜJv 440	U
Fluorene	400 U	390 U	420	U410	U420	บ + 420	ŪJ∨ 440	υ
4-Nitroaniline	1000 U	990 U	1000					
4,6-Dinitro-2-methylphenol	1000 U	990 U	. 1000	U 1000	U 1100	U .* 1100	UJV 1100	ט
N-Nitrosodiphenylamine	400 U	. 390 U	420	U 410	U 420	U. * _420	UJv 440	U .
4-Bromophenyl-phenylether	400 U	390 U	. 420				₩ 1 ± 440	ប
Hexachlorobenzene [400 U	390 U	420	U 410	U 420	ਧ ◆ 420	UJv 440	σ
Pentachlorophenol	1000 U		1000		W 1100	U + 1100	UJv 1100	U .
Phenanthrene	400 U	390 U	420				UJv 440	
Anthracene]	400 U	390 U	420	U 410	U 420	U. † 420	UJv 440	U
. 1								

ORGANIC DATA SUMMARY

Case No.: 25159

SDG: . FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix:

SOIL

. Units: _ ug/Kg

SEMIVOLATILES		_FLA	G		_FL	AG_		_FI	AG		FL	AG.		÷ = .	FLA	.G	,· <u>.</u>	_FL	AG_		-	FLAC	; .
EPA SAMPLE NUMBER:	FF-G18		FF-0	G18RE			FF-G21		FI	F-G21RE			·F	F-G22		FF-	G22RE			FF	-G23		
Phenol	400	п	*	400	17		400	₹T	*	400	π			400	77		400	п			400	п	
bis(2-Chloroethyl)ether	400	-		400	-	•	400	-	*	400	-			400			400		•	- .	400	-	
2-Chlorophenol	400	-	*.	400	_		400	-	*	400	-	-		400	-	-	400		•		400		
1,3-Dichlorobenzene	400	ប	*	400	U		400	Ū.	*_	<u>4</u> 00	U.	- _		400	σ.		400	U	•		400	ט	
1,4-Dichlorobenzene	400	U :	*	4.00	U		400	V,	• -	_ 400	Ū			400			400		*		400		
1,2-Dichlorobenzene [400	α,	*	400	Ū		400	Ū	*	400	U	-	_	400	ũ		400	Ū	•		400	σ	
2-Methylphenol	400			400			400			400		•		400	-		400	-	*		400		
2,2'-Oxybis(1-chloropropane)	400		.	400			400			400			-	400			400		*	-	400 400	-	
4-Methylphenol	400	ָ ט	*	400	U		400	U	*	400	U			400	U		400	u	*		400	U	
N-Nitroso-di-n-propylamine	400	t ,	•	400	U		400	U	*	400	Ū			400	U	_	400	U_	•		_400	U	
Hexachloroethane	400	υ,	•	400	Ü		400	Ų	*	400	U			400			400				400		
Nitrobenzene]	400	υ,	• .	400	υ		400	Ū	*	400	Ū			400	Ū		400	Ū	•		400	U	
Isophorone	400			_400			. 400		_	400			_	4.00			4,00				400		
2-Nitrophenol	400	_		400	_		400	_		400				4,00			400	_		٠	400		
2,4-Dimethylphenol [400	υ	• –	400	U		400	U	•	400	Ū			400	U		400	U	•		400	Ū	
bis(2-Chloroethoxy)methane	400.	υ.	•	_ 400	Ū		400	Ū.	*	. 400	U			400	σ.	_	400	ũ	*		400	Ū.	
2,4-Dichlorophenol	400	σ.	•	400	U		400	Ū	*	400	σ			400	U		400	Ū	*		400	U	
1,2,4-Trichlorobenzene	400	ט י	•	400	U		400	ប	•	400	U			400	υ.		.400	Ū	•		.400	U	
Naphthalene [400	υ :	*	400	U		400	U	*	400	Ū			400	U		400	σ	*	- <u>:</u>	400	σ.	
4-Chloroaniline	400	ָי ס	+	400			400		*	400				400	_		400		*		400	-	
Hexachlorobutadiene	400	υ ,	ŧ.	400	Ū		400	U	*	400	U		-	400	Ū	-	400	а	*		400	Ū	
4-Chloro-3-methylphenol	400	_		400		-	400		* -					400			400	-			400	-	
2-Methylnaphthalene	400		*	400		_	400		•	400 400	-	_	-	400 400			400 400				400 400		
Hexachlorocyclopentadiene	400	u		400	U	•	. 400	U		400	u	-	-	400	U		400	u	-		400	U	-
2,4,6-Trichlorophenol	400	U	-	400	U	*	- 400	Ų		400	Ū	.*		400	Ü	_	400	U	*		400	-	
2,4,5-Trichlorophenol	1000			1000		*	1000			1000		-		1000		-	1000		-		1000		
2-Chloronaphthalene [400	U		400	U	*	400	U	-	400	U.	*		400	a		400	U	*		400	ט	-
2-Nitroaniline	1000			1000		*	1000		-					_T000			1000		•		1000		-
Dimethylphthalate	400			400		*	400			400		*		400 400			400		•		400 400	_	
Acenaphthylene	400	U		400	u	-	400	U	÷	400	U	•	-	400	u		400	U	_		400	U	
2,6-Dinitrotoluene	400	U		400	_	*	- 400	-		400	_			400	_		400				400	-	
3-Nitroaniline	1000			1000		*	1000		-		_			-J000			1000				1000	-	
Acenaphthene	400	ū		400	_U	•	400	Ū		400	U _	-*		400	Œ.		400	U	*	-	400	U	-
2,4-Dinitrophenol	1000	U		1000	U	*	1000	U		1008	σ	*		1,000	U		1,000	Ū	*		1000	σ	_
4-Nitrophenol	1000	ŭ		1000	U	*	1000	U		. 1000			-	1000	ט		1000	U	*		1000	U	
Dibenzofuran [400	σ		400	U	*	400	Ū		400	Ū	*		400	U		400	Ū	*	-	400	ס	
2,4-Dinitrotoluene	400			400		⋆-	400	-		400			_	400			400				400	-	
Diethylphthalate	400		-	. 400		*	400			400				400			400				400		
4-Chlorophenyl-phenylether	400	U		400	U	٠	400	U		400	U	*		400	U		400	U	•		400	U	
Fluorene	400			. 400			400	-		400				400			400	-			400		
4-Nitroaniline 4,6-Dinitro-2-methylphenol	1000			1000			1000 1000			- 1000 1000				1000			1000				1000		
*.a.nturcto.s.mecuatbuenor	1000	Ų		1000	J	-	7000	J		. <u>.</u> . ±000	J	_		T000	JU 4	•							
N-Nitrosodiphenylamine 4-Bromophenyl-phenylether	400			400 400		*	400 400		-	400 400					UJV		400				400 400		
Hexachlorobenzene	400 400									400					UJV		400) U			400	_	
i																							-
Pentachlorophenol	1000			1000			1000							1,000			1000				1000		
Phenanthrene	400			400 400			400			400					UJ			T (J	
Anthracene	400	u		400	U	•	400	Ü		400	U	-		400	ŰĴΊ	7	400	ס נ	-		400	U	

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION 6

HOUSTON BRANCH 10625 FALLSTONE ROAD HOUSTON, TEXAS 77099

RESUBMITTED DATA REVIEW REPORT

DATE	:	January 24, 1997	 CASE #	#: <u></u>	25159	
			 SAS #	: _	<u> </u>	
TO:		L Biasco	 SDG_#	: _	FFG02	
		(6SF-RA)	LAB	.:	AATS	
FROM	:	Maria Missler	 SITE	:	Wilcox Oil	
		(LMSG)	 		<u> </u>	<u> </u>
		ESAT - Region 6	 TDF #	: _		
			ESAT #	‡: <u> </u>	0-1780	

EFFECTS OF RESUBMITTED INFORMATION ON THE ORIGINAL DATA:

Laboratory response to Region 6 FAX request: (received 1/21/97)

A. BNA

- 1-2 The laboratory did not make any corrections based on the premise that the CLP contract does not state specifically that two TIC's cannot have the same CAS number and compound name. This response does not affect the original data assessment.
- 3. Sample FF-G16: The laboratory corrected and resubmitted Form I SV-2 and the quantitation report. Please replace pages 1297 and 1301 with the resubmitted ones and insert submitted pages 1301A-B.
- 4. Samples FF-G03, FF-G04, FF-G07, and FF-G10: The laboratory revised and resubmitted TIC data for these samples. Please replace pages 503, 508, 509, 522, 531, 532, 912, and 916-918 and insert pages 509A, 509B, 532A-C, 541A, 541B, 918A, and 935A.
- 5. The laboratory corrected and resubmitted the analysis log. Please replace page 2682 with the resubmitted one.

A revised data summary table for the BNA fraction is included with all changes in data qualification highlighted.

B. Pest/PCB

- 1. The laboratory corrected and resubmitted Forms VI PEST-2. Please replace pages 2327-2330 with the resubmitted ones.
- 2. Method blank PBLKSC: The laboratory response does not affect the original data assessment.

Case No.: 25159

SDG:

FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: - SOIL

Units:

ug/Kg

semivolatiles	ļ	FLAG_	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	! FF-G23RE	-						
Phenol		ט +						
bis (2-Chloroethyl) ether	•	υ ÷			_			
2-Chlorophenol	•	ŭ *						=
1,3-Dichlorobenzene	[400	u +				-		-
1,4-Dichlorobenzene	400	U *						
1,2-Dichlorobenzene	400	ŭ *		-				
2-Methylphenol	400		-			-		-
2,2'-Oxybis(1-chloropropane)		ਹ *	-				-	
4-Methylphenol	400 	υ *	-		- ,			
N-Nitroso-di-n-propylamine	400	U *	-		-		-	
Hexachloroethane		ਹ *						
Nitrobenzene	400	U *						-
Isophorone		u •						
2-Nitrophenol		U *	-					•
2,4-Dimethylphenol	400 	υ •						
bis(2-Chloroethoxy)methane	400	U *	-				-	
2,4-Dichlorophenol	400			-				
1,2,4-Trichlorobenzene	400	σ *						-
Naphthalene	400	U +						-
4-Chloroaniline	400							
Hexachlorobutadiene	400	* ס						
4-Chloro-3-methylphenol	400							-
2-Methylnaphthalene	400							-
Hexachlorocyclopentadiene	400	U *						
2,4,6-Trichlorophenol	400					 -	-	
2.4,5-Trichlorophenol	1000							-
2-Chloronaphthalene	400	υ •						•
2-Nitroaniline	1000			-	-			
Dimethylphthalate	400				-		Ē	
Acenaphthylene	400	υ •				-		
2,6-Dinitrotoluene	400							
3-Nitroaniline	1000					-		
Acenaphthene	400 	υ •						
2,4-Dinitrophenol	1000		-	-	=		-	
4-Nitrophenol	1000	-						-
Dibenzofuran	400	- 0						
2.4-Dinitrotoluene	•	.					-	_
Diethylphthalate	•	ʊ • ₋						
4-Chlorophenyl-phenylether	400	ਹ •						
Fluorene	•	U *						•
4-Nitrosniline 4.6-Dinitro-2-methylphenol	1000					_	-	-
	[1000 [U *				- -	-	
N-Nitrosodiphenylamine	•	U *				-		
4-Bromophenyl-phenylether Hexachlorobenzene	•	T *				-	=	
Hexachlorobenzene	1 400	U *				-	•	
Pentachlorophenol	1000	σ		=		e e		-
Phenanthrene	35		Ē				-	
Anthracene	400 	υ -						

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET ______EPA SAMPLE NO.

FFG16

ab Name: SWL-TULSA Contract: 68-D5-0022

30.0 (g/mL) G

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27670.09

Lab File ID: P10137.D

Date Received: 11/19/96 1954 16 Level: (low/med) LOW

Date Extracted: 11/19/96 % Moisture: 24 decanted: (Y/N) N

Date Analyzed: 12/02/96 Concentrated Extract Volume: 500(uL)

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.4

Sample wt/vol:

CONCENTRATION UNITS: CAS NO. COMPOUND (ug/L or ug/Kg) UG/KG

	(43/2 01 43/	, 119 , 50 , 110	
51-28-5	2,4-Dinitrophenol	1100	U
100-02-7	4-Nitrophenol	1100	Ū
132-64-9	Dibenzofuran	430	U
121-14-2	2,4-Dinitrotoluene	430	ប
84-66-2	Diethylphthalate	430	บ
7005-72-3	4-Chlorophenyl-phenylether	430	ប
86-73-7	Fluorene	430	บ
100-01-6	4-Nitroaniline	1100	บ
534-52-1	4,6-Dinitro-2-methylphenol	1100	บ
86-30-6	N-Nitrosodiphenylamine (1)	430	U
101-55-3	4-Bromophenyl-phenylether	430	บ
118-74-1	Hexachlorobenzene	430	U
87-86-5	Pentachlorophenol	1100	U
85-01-8	Phenanthrene	430	U
	Anthracene	430	ប
	Carbazole	430	ט
84-74-2	Di-n-butylphthalate	150	JB
	Fluoranthene	430	ס
129-00-0	Pyrene	430	ס
85-68-7	Butylbenzylphthalate	100	J
91-94-1	3,3'-Dichlorobenzidine	430	ט
56-55-3	Benzo(a)anthracene	90	J
218-01-9	Chrysene	430	ט
117-81-7	bis(2-Ethylhexyl)phthalate	430	ប
117-84-0	Di-n-octylphthalate	27	J
205-99-2	Benzo(b)fluoranthene	430	ט
207-08-9	Benzo(k)fluoranthene	430	ט
50-32-8	Benzo(a)pyrene	150	J
193-39-5	Indeno(1,2,3-cd)pyrene	430	ט
53-70-3	Dibenz(a,h)anthracene	430	ט
191-24-2	Benzo(g,h,i)perylene	430	ט
			l

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

EPA SAMPLE NO.

1F. SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

FFG16

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.09

Sample wt/vol:

30.0 (g/mL) G

Lab File ID:

P10137.D

Date Received: 11/18/96/01/19/

Level: (low/med) LOW

% Moisture: 24 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/02/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

рH: 9.4

Number TICs found: 35

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	3,203	250	J
2.	UNKNOWN	3.282	1800	J
3.	UNKNOWN	3.656	460	JB
4.	UNKNOWN	3.853	360	J
5.	UNKNOWN	3.991	390	JВ
6.	UNKNOWN	4.059	230	JВ
7. 123-42-2	2-Pentanone, 4-hydroxy-4-met	4.158	2200	NJA
8.	UNKNOWN AMIDE	4.237	460	J
9.	UNKNOWN	4.926	160	J
10.	-Hexenone, -methyl-	5.359	150	J
11.	UNKNOWN	7.427	150	
12.	Phenol, -ethyl-	7.948	120	J
13.	UNKNOWN	15.526	440	1 1 1 1 1 1 1
14.	UNKNOWN	15.873	240	J
15.	UNKNOWN	17.101	280	J
16.	UNKNOWN	17.567	230	J
17.	UNKNOWN	17.875	220	J
18.	UNKNOWN	18.510	280	J
19.	UNKNOWN	19.503	260	J
20.	UNKNOWN	19.970	260	J
21.	UNKNOWN	20.358	650	J
22.	Unknown	20.437	380	J
23.	UNKNOWN	20.567	490	্য
24.	UNKNOWN	20.785	220	J
25.	UNKNOWN	20.845	250	J
26.	UNKNOWN	20.895	230	מממממממממממ
27.	UNKNOWN	21.114	310	Ĵ
28.	UNKNOWN	21.233	420	Ĵ
29.	UNKNOWN	21.322	680	J
30.	UNKNOWN	21.531	290	J
	ł — <u> </u>	l	<u> </u>	

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Tab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27670.07

Man Dampie ID: 27070.07

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10135.D Level: (low/med) LOW Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/02/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.7

		CONCENTRATION UNITS:
CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/KG Q

108-95-2Phenol	400	/ 0
111-44-4bis(2-Chloroethyl)Ether	400	Ü
95-57-82-Chlorophenol	400	ŭ
541-73-11,3-Dichlorobenzene	400	ŭ
106-46-71,4-Dichlorobenzene	400	Ū
95-50-11,2-Dichlorobenzene	400	Ū
95-48-72-Methylphenol	400	Ū
108-60-12,2'-oxybis(1-Chloropropane)	400	Ū
106-44-54-Methylphenol	400	Ū
621-64-7N-Nitroso-di-n-propylamine	400	וס
67-72-1Hexachloroethane	400	ט
98-95-3Nitrobenzene	400	ប
78-59-1Isophorone	400	ט
88-75-52-Nitrophenol	400	ប
88-75-52-Nitrophenol 105-67-92,4-Dimethylphenol	400	ប
111-91-1bis(2-Chloroethoxy)methane	400	ט
120-83-22,4-Dichlorophenol	400	υ
120-82-11,2,4-Trichlorobenzene	400	U
91-20-3Naphthalene	400	υ
106-47-84-Chloroaniline	400	ט
87-68-3Hexachlorobutadiene	400	U
59-50-74-Chloro-3-Methylphenol	400	U
91-57-62-Methylnaphthalene	400	Ū
77-47-4Hexachlorocyclopentadiene	400	ប
88-06-22,4,6-Trichlorophenol	400	יט
95-95-42,4,5-Trichlorophenol	1000	ש
91-58-72-Chloronaphthalene	400	ט
88-74-42-Nitroaniline	1.000	ប
131-11-3Dimethylphthalate	400	IJ
208-96-8Acenaphthylene	400	ש
606-20-22,6-Dinitrotoluene	400	U
99-09-23-Nitroaniline	1000	U
83-32-9Acenaphthene	400	U

FORM I SV-1

EPA SAMPLE NO.

Tab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27670.07

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10135.D

Level: (low/med) LOW Date Received: 11/19/96 00 10/19/96

% Moisture: 18 decanted: (Y/N) N Date Extracted:11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/02/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.7

CONCENTRATION UNITS:
CAS NO. COMPOUND (ug/L or ug/Kg) UG/KG Q

1000 51-28-5----2,4-Dinitrophenol____ 100-02-7----4-Nitrophenol 1000 U U 132-64-9------Dibenzofuran 400 121-14-2----2,4-Dinitrotoluene____ U 400 U 84-66-2----Diethylphthalate 400 Ū 7005-72-3----4-Chlorophenyl-phenylether 400 86-73-7-----Fluorene U 400 100-01-6----4-Nitroaniline U 1000 534-52-1----4,6-Dinitro-2-methylphenol 86-30-6----N-Nitrosodiphenylamine (1) U 1000 U 400 101-55-3-----4-Bromophenyl-phenylether Ŭ 400 118-74-1-----Hexachlorobenzene U 400 U 87-86-5----Pentachlorophenol 1000 85-01-8----Phenanthrene U 400 120-12-7-----Anthracene U 400 86-74-8-----Carbazole 400 U 84-74-2----Di-n-butylphthalate 400 l Ū 206-44-0----Fluoranthene 400 129-00-0-----Pyrene Ū 400 Ū 85-68-7----Butylbenzylphthalate 400 Ü 91-94-1----3,3'-Dichlorobenzidine 400 56-55-3----Benzo(a)anthracene U 400 U 218-01-9----Chrysene 400 U 117-81-7-----bis(2-Ethylhexyl)phthalate 400 Ū 117-84-0-----Di-n-octylphthalate_ 205-99-2-----Benzo(b)fluoranthene_ 400 Ū 400 Ū 207-08-9----Benzo(k)fluoranthene 400 Ū 50-32-8-----Benzo(a)pyrene 400 193-39-5----Indeno(1,2,3-cd)pyrene_ U 400 U 53-70-3----Dibenz(a,h)anthracene_ 400 191-24-2----Benzo(g,h,i)perylene_ 400

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLMO3.0

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVETY TRANSPORTER SOLVER SHEET TENTATIVELY IDENTIFIED COMPOUNDS

FFG14	-	

Tab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27670.07

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10135.D

Date Received: 11/19/96 13/34/96 Level: (low/med) LOW

% Moisture: 18 decanted: (Y/N) N Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/02/96

Dilution Factor: 1.0

Injection Volume: 2.0(uL) GPC Cleanup: (Y/N) Y pH: 7.7

CONCENTRATION UNITS:
Number TICs found: 22 (ug/L or ug/Kg) UG/KG

COMPOUND NAME RT CAS NUMBER EST. CONC. 130 920 83 620 2300 UNKNOWN AMIDE 3.281
UNKNOWN 3.656
UNKNOWN 3.862
-Buten--one, -methyl- 3.990
2-Pentanone, 4-hydroxy-4-met 4.158
UNKNOWN 4.237 2. JB 4. 5. 123-42-2 6. J NJA 140 4.926 7. UNKNOWN 280 l 150 8. UNKNOWN 5.359 -Hexen--one, -methyl-9. 5.487 140 l J 10. 120 J UNKNOWN 17.692 230 11. UNKNOWN 20.106 UNKNOWN 640 l 12. 21.742 13. UNKNOWN 21.860 290 180 14. UNKNOWN 22.245 15. UNKNOWN PAH 22.570 840 i UNKNOWN 600 16. 22.679 UNKNOWN PAH 500 17. 22.698 280 18. UNKNOWN 22.846 170 19. UNKNOWN 22.915 20. UNKNOWN 23.142 190 l UNKNOWN 1100 21. 24.226 600 22. UNKNOWN 24.394 23. 29.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

FFG15
Tab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27670.08

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10136.D

Level: (low/med) LOW Date Received: 11/19/96

% Moisture: 13 decanted: (Y/N) N Date Extracted:11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/02/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.7

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/KG Q

108-95-2	Phenol	380-	ט
	bis(2-Chloroethyl)Ether	380	ប
95-57-8	2-Chlorophenol	380	บ
541-73-1	1,3-Dichlorobenzene	380	Ū
106-46-7	1,4-Dichlorobenzene	380	ប
	1,2-Dichlorobenzene	380	ប
95-48-7	2-Methylphenol	380	ប
108-60-1	2.2'-oxybis(1-Chloropropage)	380	ซ
106-44-5	4-Methylphenol	380	ប
621-64-7	N-Nitroso-di-n-propylamine	380	ប
67-72-1	Hexachloroethane	380	ប
98-95-3	Nitrobenzene	380	U
78-59-1	Isophorone	380	ប
88-75-5	2-Nitrophenol	380	ប
105-67-9	2,4-Dimethylphenol	380	บ
111-91-1	bis(2-Chloroethoxy)methane	380	ប
120-83-2	2,4-Dichlorophenol	380	ប
120-82-1	1,2,4-Trichlorobenzene	380	ש
91-20-3	Naphthalene	81	J
106-47-8	4-Chloroaniline	380	ប
87-68-3	Hexachlorobutadiene	380	ប
59-50-7	4-Chloro-3-Methylphenol	380	ប
91-57-6	2-Methylnaphthalene	200	J
77-47-4	Hexachlorocyclopentadiene	380	ប
88-06-2	2,4,6-Trichlorophenol	380	ט
95-95-4	2,4,5-Trichlorophenol	950	ប
91-58-7	2-Chloronaphthalene	380	ט
88-74-4	2-Nitroaniline	950	ប
131-11-3	Dimethylphthalate	380	ប
208-96-8	Acenaphthylene	380	ਹ
606-20-2	2,6-Dinitrotoluene	380	ប
99-09-2	3-Nitroaniline	950	ប
	Acenaphthene	380	U
			l

FORM I SV-1

OLMO3.0

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

ab Name: SWL-TULSA ____Contract: 68-D5-0022 ____

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27670.08

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10136.D

Level: (low/med) LOW Date Received: 11/19/96 Phylaul No.

% Moisture: 13 decanted: (Y/N) N Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/02/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.7

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/KG

· · · · · · · · · · · · · · · · · · ·		
51-28-52,4-Dinitrophenol	950	υ
100-02-74-Nitrophenol	950	Ū
132-64-9Dibenzofuran	380	U
121-14-22,4-Dinitrotoluene	e 380	U
84-66-2Diethylphthalate	380	U
7005-72-34-Chlorophenyl-phe	envlether 380	U
86-73-7Fluorene	380	U
100-01-64-Nitroaniline	950	U
534-52-14,6-Dinitro-2-met	hylphenol 950	Ū
86-30-6N-Nitrosodiphenyla	amine (1) 380	U
101-55-34-Bromophenyl-phen	nylether 380	ซ
118-74-1Hexachlorobenzene	380	Ū
87-86-5Pentachlorophenol	950	U
85-01-8Phenanthrene	√790	
120-12-7Anthracene	380	Ū
86-74-8Carbazole	380	U
84-74-2Di-n-butylphthala	te 380	U
206-44-0Fluoranthene	380	U
129-00-0Pyrene	560	
85-68-7Butylbenzylphthal	ate 380	Ū
91-94-13,3 -Dichlorobenz	idine 380	ប
56-55-3Benzo(a)anthracen	e 300	J
218-01-9Chrysene	√ 690	
117-81-7bis(2-Ethylhexyl)	phthalate 380	<u>U</u>
117-84-0Di-n-octylphthala	te 380	Ū
205-99-2Benzo(b)fluoranth	ene 230	J
207-08-9Benzo(k)fluoranth	ene 380	U
50-32-8Benzo(a)pyrene	250	J
193-39-5Indeno(1,2,3-cd)p	yrene 380	U
53-70-3Dibenz(a,h)anthra	cene 380	Ţ
191-24-2Benzo(g,h,i)peryl	ene 440	

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

FFG15

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27670.08

Mactik. (Soli) water, Soli

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10136.D

Level: (low/med) LOW Date Received: 11/19/96

% Moisture: 13 decanted: (Y/N) N Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/02/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.7

Number TICs found: 35 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAG ANDONE	GOVERNITO VINE	77/17	EST. CONC.	0
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	<u>Q</u>
1.	UNKNOWN AMIDE	3.282	820	J
1 2.	UNKNOWN	3.665	1500	JВ
3.	-Pentene, -dimethyl-	3.715	100	J
4.	UNKNOWN AMIDE	3.862	280	J
5.	-Butenone, -methyl-	3.990	990	J
6.	UNKNOWN	4.059	200	JВ
7. 123-42-2	2-Pentanone, 4-hydroxy-4-met	4.158	1900	ŊJ
8.	UNKNOWN	4.237	380	
9.	Unknown	4.325	84	J
10.	UNKNOWN	4.926	420	. J
11. 110-13-4	2,5-Hexanedione	5.113	130	ŊJ
12.	(5H)-Furanone, -dimethyl-	5.359	120	J
13. 90-12-0	Naphthalene, 1-methyl-	9.720	79	ŊJ
14.	Naphthalene, -dimethyl-	10.635	150	J
15.	UNKNOWN	11.157	140	
16.	UNKNOWN	14.591	160	J
17.	UNKNOWN	14.729	160	J J
18.	Anthracene, -methyl-	14.887	370	J.
19.	Anthracene, -methyl-	14.936	540	
20.	UNKNOWN	15.094	220	ũ
21.	1H-Indene, -phenyl-	15.123	170	<u>1</u>
22.	UNKNOWN	15.744	210	냋
23.	Phenanthrene, -dimethyl-	15.882	170	
24.	UNKNOWN PAH	16.128	240	7
25.	Pyrene, -methyl-	17.300	470	7
26.	Chrysene, -methyl-	19.312	570	3
27.	Triphenylene, -methyl-	19.381	440	J
28.	UNKNOWN	20.358	660	
29. 198-55-0	Perylene	20.793	870	NJ J
30.	UNKNOWN	21.741	340	ال
l	l	l	<u></u>	l

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

ab Name: SWL-TULSA

FFG15

Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Sample wt/vol: 30.0 (g/mL) G

Lab File ID:

P10136.D

Level: (low/med) LOW

Date Received: 11/19/96

Matrix: (soil/water) SOIL Lab Sample ID: 27670.08

% Moisture: 13 decanted: (Y/N) N Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/02/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y = pH: 7.7

CONCENTRATION UNITS: Number TICs found: 35 CONCENTRATION UNITS:
- (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 2. 3. 4. 5.	UNKNOWN UNKNOWN Unknown UNKNOWN UNKNOWN	22.858 23.174 23.470 23.549 23.648	760 320 370 680 530	J J J
7. 8. 9. 10.				
12. 13. 14. 15. 16.				
17. 18. 19. 20. 21. 22.				
23. 24. 25. 26.				
28. 29. 30.				

1B SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

FFG15RE

Contract: 68-D5-0022

SDG No.: FFG02 Lab Code: AATS Case No.: 25159 SAS No.:

Lab Sample ID: 27670.08RA Matrix: (soil/water) SOIL

30.0 (g/mL) G Sample wt/vol: Lab File ID: P10195.D

Date Received: 11/19/96 Level: (low/med) LOW

% Moisture: 13 Date Extracted:11/19/96 decanted: (Y/N) N

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/05/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.7

ab Name: SWL-TULSA

CONCENTRATION UNITS: CAS NO. (ug/L or ug/Kg) UG/KG COMPOUND . Q

111-44-4bis(2-Chloroethyl)Ether 380 95-57-82-Chlorophenol 380 541-73-11,3-Dichlorobenzene 380 106-46-71,4-Dichlorobenzene 380 95-50-11,2-Dichlorobenzene 380 95-48-72-Methylphenol 380 108-60-12,2'-oxybis(1-Chloropropane) 380 106-44-54-Methylphenol 380 621-64-7Hexachloroethane 380 98-95-3Nitrobenzene 380 78-59-1	CAD NO.	COMPOUND : (ug/n or ug/	ng, co,na	- x:
111-44-4	108-95-2	Phenol	380	σ
95-57-8			380	ប
106-46-7			380	U
106-46-7			380	ប
95-48-7	106-46-7	1.4-Dichlorobenzene	380	บ
95-48-72-Methylphenol 380 108-60-12,2'-oxybis(1-Chloropropane) 380 106-44-54-Methylphenol 380 621-64-7N-Nitroso-di-n-propylamine 380 67-72-1Hexachloroethane 380 98-95-3Isophorone 380 88-75-52-Nitrophenol 380 105-67-92,4-Dimethylphenol 380 111-91-1	95-50-1	1,2-Dichlorobenzene	380	U
108-60-12,2'-oxybis(1-Chloropropane) 380 106-44-54-Methylphenol 380 621-64-7N-Nitroso-di-n-propylamine 380 67-72-1	95-48-7	2-Methylphenol	380	ប
621-64-7Nitroso-di-n-propylamine 67-72-1Hexachloroethane 98-95-3Nitrobenzene 78-59-1	108-60-1	2,2'-oxybis(1-Chloropropane)		บ
621-64-7Nitroso-di-n-propylamine 67-72-1Hexachloroethane 98-95-3Nitrobenzene 78-59-1	106-44-5	4-Methylphenol		U
67-72-1	621-64-7	N-Nitroso-di-n-propylamine		บ
78-59-1	67-72-1	Hexachloroethane		σ
88-75-5	98-95-3	Nitrobenzene		บ
88-75-5	78-59-1	Isophorone	1	Ü
111-91-1	88-75-5	2-Nitrophenol		บ
111-91-1	105-67-9	2,4-Dimethylphenol		ប
120-82-11,2,4-Trichlorobenzene 380 91-20-3Naphthalene 380 106-47-84-Chloroaniline 380 87-68-3Hexachlorobutadiene 380 59-50-74-Chloro-3-Methylphenol 380 91-57-6	111-91-1	bis(2-Chloroethoxy)methane		U
120-82-11,2,4-Trichlorobenzene 380 91-20-3Naphthalene 380 106-47-84-Chloroaniline 380 87-68-3Hexachlorobutadiene 380 59-50-74-Chloro-3-Methylphenol 380 91-57-62-Methylnaphthalene 180 77-47-4Hexachlorocyclopentadiene 380 88-06-22,4,6-Trichlorophenol 950 91-58-72-Chloronaphthalene 380 88-74-42-Nitroaniline 950 131-11-3Dimethylphthalate 380 208-96-8Acenaphthylene 380 606-20-23-Nitroaniline 950	120-83-2	2,4-Dichlorophenol		U
106-47-84-Chloroaniline 380 87-68-3Hexachlorobutadiene 380 59-50-74-Chloro-3-Methylphenol 380 91-57-62-Methylnaphthalene 180 77-47-4Hexachlorocyclopentadiene 380 88-06-22,4,6-Trichlorophenol 380 95-95-42,4,5-Trichlorophenol 950 91-58-72-Chloronaphthalene 380 88-74-42-Nitroaniline 950 131-11-3Dimethylphthalate 380 208-96-8Acenaphthylene 380 606-20-23-Nitroaniline 950	120-82-1	1,2,4-Trichlorobenzene		Ū
87-68-3	91-20-3	Naphthalene		U
59-50-74-Chloro-3-Methylphenol 380 91-57-62-Methylnaphthalene 180 77-47-4Hexachlorocyclopentadiene 380 88-06-22,4,6-Trichlorophenol 380 95-95-42,4,5-Trichlorophenol 950 91-58-72-Chloronaphthalene 380 88-74-42-Nitroaniline 950 131-11-3Dimethylphthalate 380 208-96-8Acenaphthylene 380 606-20-22,6-Dinitrotoluene 380 99-09-23-Nitroaniline 950	=		-	ש
91-57-62-Methylnaphthalene 180 77-47-4Hexachlorocyclopentadiene 380 88-06-22,4,6-Trichlorophenol 380 95-95-42,4,5-Trichlorophenol 950 91-58-72-Chloronaphthalene 380 88-74-42-Nitroaniline 950 131-11-3Dimethylphthalate 380 208-96-8Acenaphthylene 380 606-20-22,6-Dinitrotoluene 380 99-09-23-Nitroaniline 950				Ū
77-47-4				ַ עַ
88-06-22,4,6-Trichlorophenol 380 95-95-42,4,5-Trichlorophenol 950 91-58-72-Chloronaphthalene 380 88-74-42-Nitroaniline 950 131-11-3Dimethylphthalate 380 208-96-8Acenaphthylene 380 606-20-22,6-Dinitrotoluene 380 99-09-23-Nitroaniline 950				J
95-95-42,4,5-Trichlorophenol 950 91-58-72-Chloronaphthalene 380 88-74-42-Nitroaniline 950 131-11-3Dimethylphthalate 380 208-96-8Acenaphthylene 380 606-20-22,6-Dinitrotoluene 380 99-09-23-Nitroaniline 950	77-47-4	Hexachlorocyclopentadiene		ט
91-58-72-Chloronaphthalene 380 88-74-42-Nitroaniline 950 131-11-3Dimethylphthalate 380 208-96-8Acenaphthylene 380 606-20-22,6-Dinitrotoluene 380 99-09-23-Nitroaniline 950	88-06-2	2,4,6-Trichlorophenol		ט
88-74-42-Nitroaniline 950 131-11-3Dimethylphthalate 380 208-96-8Acenaphthylene 380 606-20-22,6-Dinitrotoluene 950 99-09-23-Nitroaniline 950	95-95-4	2,4,5-Trichlorophenol		Ū
131-11-3				Ū
208-96-8				ם ש
606-20-22,6-Dinitrotoluene 380 99-09-23-Nitroaniline 950				Ū
99-09-23-Nitroaniline 950				<u>ת</u>
	606-20-2	2,6-Dinitrotoluene		Ū
83-32-9Acenaphthene				ת ו
	83-32-9	Acenaphthene	580	ט
				l

FORM I SV-1

OLMO3.0

EPA SAMPLE NO.

P10195.D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

FFG15RE ab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Lab Sample ID: 27670.08RA Matrix: (soil/water) SOIL

Date Received: 11/19/96 15/24 Level: (low/med) LOW

% Moisture: 13 decanted: (Y/N) N Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/05/96

Dilution Factor: 1.0 Injection Volume: 2.0(uL)

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

GPC Cleanup: (Y/N) Y pH: 7.7

CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug/Kg)	UG/KG	Q
	2,4-Dinitrophenol	_	950	ប
	4-Nitrophenol		950	U
132-64-9	Dibenzofuran		380	U
121-14-2	2,4-Dinitrotoluene		380	U
84-66-2	Diethylphthalate		380	บ
7005-72-3	4-Chlorophenyl-phe	nvlether	380	U
86-73-7	Fluorene	.—	380	U
100-01-6	4-Nitroaniline		950	บ
534-52-1	4,6-Dinitro-2-meth	vlphenol	950	บ
86-30-6	N-Nitrosodiphenyla	nine (1)	380	U
101-55-3	4-Bromophenyl-phen	vlether'—	380	U
118-74-1	Hexachlorobenzene		380	Ū
	Pentachlorophenol		950	Ū
85-01-8	Phenanthrene		820	
120-12-7			380	Ū
86-74-8			380	IJ
	Di-n-butylphthalate	2	57	Ј В
206-44-0	Fluoranthene		110	J
129-00-0			590	
85-68-7	Butylbenzylphthala	te	380	Ū
91-94-1	3,3'-Dichlorobenzi	dine	380	Ū
56-55-3	Benzo(a)anthracene		280	J
218-01-9	Chrysene		670	
	bis(2-Ethylhexyl)p	hthalate	380	U
117-84-0	Di-n-octylphthalat	e —	380	Ū
205-99-2	Benzo(b)fluoranthe	ne l	210	J
207-08-9	Benzo(k)fluoranthe	ne _	58	J
50-32-8	Benzo(a)pyrene		240	J
193-39-5	Indeno(1,2,3-cd)py	rene	380	Ū
53-70-3	Dibenz(a,h)anthrac	ene	380	์ บั
191-24-2	Benzo(g,h,i)peryle	ne	380	Ū
	- Porrao (Almit) berlic		300	ľ

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLMO3.0

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

FFG15RE

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.08RA

Sample wt/vol:

Lab File ID:

P10195.D

Level: (low/med)

30.0 (g/mL) G LOW

Date Received: 11/18/96

% Moisture: 13

decanted: (Y/N) N

Date Extracted:11/19/96

Concentrated Extract Volume:

500(uL)

Date Analyzed: 12/05/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.7

Number TICs found: 35

CONCENTRATION UNITS: (uq/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
7	TTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT		060	
1.	UNKNOWN	3.104	960	Ţ
2.	UNKNOWN	3.154	84	J
	UNKNOWN	3.488	1200	JB
4.	UNKNOWN	3.665	200	JВ
5.	UNKNOWN	3.813	930	J
6. 123-42-2	2-Pentanone, 4-hydroxy-4-met		1800	NJB
7.	UNKNOWN	4.059	300	лв
8.	UNKNOWN HYDROCARBON	4.168	95	J
9.	UNKNOWN	4.247	180	
10.	UNKNOWN	4.709	440	J
11.	UNKNOWN	4.749	620	J
12. 110-13-4	2,5-Hexanedione	4.896	140	NJ
13.	UNKNOWN	5.142	82	JB
14.	UNKNOWN	6.393	120	J
15.	UNKNOWN	7.672	92	ு J
16. 90-12-0	Naphthalene, 1-methyl-	9.453	100	UИ
17.	Naphthalene, -dimethyl-	10.379	170	J
18.	Naphthalene, -dimethyl-	10.526	85	
19.	UNKNOWN	10.723	110	J
20.	UNKNOWN	13.528	170	J
21.	UNKNOWN PAH	14.306	150	J
22.	UNKNOWN PAH	14.454	130	J
23.	Anthracene, -methyl-	14.611	420	J J J J
24.	Anthracene, -methyl-	14.661	630	<u> </u>
25.	Anthracene, -methyl-	14.720	180	
26.	Phenanthrene, -methyl-	14.809	130	J
27.	Phenanthrene, -dimethyl-	15.400	120	J
28.	Phenanthrene, -dimethyl-	15.459	140	J
29.	Phenanthrene, -dimethyl-	15.439	160	J
30.	Pyrene, -methyl-		410	
J	LATERS, -Mechar-	17.017	410	"!
<u>. </u>	!	l		il

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

ab Name: SWL-TULSA Contract: 68-D5-0022 FFG15RE

Lab Code: AATS

Case No.: 25159

SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab File ID:

Lab Sample ID: 27670.08RA P10195.D

Sample wt/vol:

30.0 (g/mL) G

Date Received: 11/19/96

Level:

(low/med)

LOW

% Moisture: 13

decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume:

Date Analyzed: 12/05/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 7.7

500(uL)

Number TICs found: 35

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 2. 3. 4. 5.	Chrysene, -methyl- Chrysene, -methyl- UNKNOWN UNKNOWN UNKNOWN	19.029 19.108 20.104 20.499 23.184	490 540 820 500 590	r r r
6. 7. 8. 9.				
12. 13. 14.				
17. 18. 19.				
21. 22. 23. 24. 25.				
26. 27. 28. 29.				

1B SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

FFG16 ab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27670.09

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10137.D

Date Received: 11/19/96 304/76 Level: (low/med) LOW

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/02/96

Dilution Factor: 1.0 Injection Volume: 2.0(uL)

GPC Cleanup: (Y/N) Y pH: 9.4

CONCENTRATION UNITS: CAS NO. COMPOUND (ug/L or ug/Kg) UG/KG

108-95-2----Phenol 111-44-4----bis(2-Chloroethyl)Ether_ 4301 430 U 95-57-8----2-Chlorophenol 430 U 541-73-1----1,3-Dichlorobenzene 430 Ū 106-46-7----1,4-Dichlorobenzene U 430 95-50-1----1,2-Dichlorobenzene U 430 95-48-7-----2-Methylphenol 61 J 108-60-1----2,2'-oxybis(1-Chloropropane) 430 U 106-44-5-----4-Methylphenol_ J 94 621-64-7----N-Nitroso-di-n-propylamine U 430 67-72-1----Hexachloroethane U 430 98-95-3----Nitrobenzene_ U 430 78-59-1-----Isophorone 430 U 88-75-5----2-Nitrophenol U *4*30 105-67-9----2,4-Dimethylphenol 111-91-1-----bis(2-Chloroethoxy)methane J /360| 430 U 120-83-2----2,4-Dichlorophenol 120-82-1----1,2,4-Trichlorobenzene U 430 U 430 91-20-3----Naphthalene U 430 U 106-47-8----4-Chloroaniline 430 87-68-3----Hexachlorobutadiene Ū 430 59-50-7----4-Chloro-3-Methylphenol U 430 91-57-6----2-Methylnaphthalene_ 430 Ū U 430 430 U 1100 U 91-58-7----2-Chloronaphthalene___ 430 U U 88-74-4----2-Nitroaniline 1100 131-11-3-----Dimethylphthalate U 430 208-96-8-----Acenaphthylene U 430 606-20-2----2,6-Dinitrotoluene_ 99-09-2----3-Nitroaniline_ 430 U U 1100 83-32-9----Acenaphthene 430

OLM03.0



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6 HOUSTON BRANCH 10625 FALLSTONE RD. HOUSTON, TEXAS 77099

MEMORANDUM

		_					
Date:	•	1 -	-2	1	-1	99	7

Contract Laboratory Program Data Review Subject:

Melvin L. Ritter, ESAT RPO, 6MD-HC From:

L. Biasco , 6SF-RA To:

> WILCOX OIL Case#: 25159 SDG#: FF-G02

The EPA Region 6 Houston Branch ESAT data validation team has completed a review of the submitted Contract Laboratory Program (CLP) data package for the referenced site. The samples analyzed and reviewed are detailed in the attached Regional data review and assessment report for this case.

The data package was found to be:

- () Acceptable: No major problems with data package.
- (X) Provisional: Use of data requires caution. Data is acceptable for Regional use. Problems are noted in the review report.
- Unacceptable: Some or all of data should not be used. Problems are noted in the review report.

Questions regarding the data review report can be addressed to me.

Attachments

R. Flores, Region 6 CLP/TPO cc:

M. El-feky, Region 6 Data Coordinator

Files (2)

LOCKHEED MARTIN SERVICES GROUP 10101 Southwest Freeway, Suite 500 HOUSTON, TX 77074

MEMORANDUM

DATE:

January 10, 1997

TO:

FROM:

Dr. Melvin Ritter, ESAT RPO, Region VI

SUBJECT:

Melvin Ritter, ESAT RPO, Region vi Tom C. H. Chiang, ESAT ETM, Region VI CLP Data Review

REF:

TDF # 6-7113A

ESAT # 0-1780

Attached	is	the	data	review	summary	for	Case	#	25159
					_				FFG02
							Cita		Wilcox Oil

COMMENTS:

- CONTRACTUAL ASSESSMENT OF THE DATA PACKAGE I.
 - A. The data package contained the following contractual noncompliance as determined by the hard copy data review and the CCS audit.

The laboratory extracted BNA sample FF-G06RE 29 days after sample receipt (OLM03.0, D-18/SVOA, 8.4.1). All results were qualified for this sample because of the excessive holding time.

- B. The data package contained the following contractual noncompliance as determined by the hard copy data review but not by CCS.
 - Pest/PCB method blank PBLKSC had a peak on the DB-17 column above the CRQL that interfered with the detection of endosulfan sulfate (OLM03.0, D-73/PEST, 12.1.2.4). This deficiency caused the raised quantitation limits for endosulfan sulfate in samples FF-G15 and FF-G23.
 - 2. The data package arrived three days late.
- TECHNICAL/USABILITY ASSESSMENT OF THE DATA PACKAGE II.

A total of 2,500 results were reviewed for this data package. The data package is technically provisional and technical deficiencies are listed below.

- One BNA sample was extracted 29 days after sample collection.
- 2. Four VOA and eight BNA samples had low internal standard responses.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6 HOUSTON BRANCH

10625 FALLSTONE ROAD HOUSTON, TEXAS 77099

ORGANIC REGIONAL DATA ASSESSMENT

CASE NO. 25159	SITE	Wilcox Oil
LABORATORY AATS	NO. OF SAMPLES_	20
CONTRACT# 68-D5-0022	MATRIX	Soil
SDG#FFG02	REVIEWER (IF NO	T ESD) ESAT
SOW# RAS SOW OLM03.2	REVIEWER'S NAME	<u> Maria Missler</u>
ACCT# 7FAXJN28 SF# FAXU	ZZ COMPLETION DATE	January 10, 1997
SAMPLE NO. <u>FF-G02</u>	FF-G06 FF-G10 _	FF-G14 FF-G18
FF-G03	FF-G07 FF-G11	FF-G15 FF-G21
FF-G04	FF-G08 FF-G12	FF-G16 FF-G22
FF-G05	FF-G09 FF-G13	FF-G17 FF-G23
		

DATA ASSESSMENT SUMMARY

1.	HOLDING TIMES	VOA O	BNA M	PEST O
2.	GC/MS TUNE/INSTR. PERFORM.		<u> </u>	
З.	CALIBRATIONS	<u>M</u>		O
4.	BLANKS			M
5.	SMC/SURROGATES	o		0
6.	MATRIX SPIKE/DUPLICATE			0
7.	OTHER QC	<u>M</u>	O	O
8.	INTERNAL STANDARDS	M	M	N/A
9.	COMPOUND ID/QUANTITATION			M
10.	PERFORMANCE/COMPLETENESS			O
11.	OVERALL ASSESSMENT	M	M	M

- O = Data had no problems.
- M = Data qualified because of major or minor problems.
- Z = Data unacceptable.
- NA = Not applicable.

ACTION ITEMS: BNA sample FF-G06RE was extracted 19 days past the holding time requirement. One Pest/PCB method blank had a peak that interfered with the detection of endosulfan sulfate above the CRQL on one column.

AREA OF CONCERN: The extraction holding time was excessive for BNA sample FF-GO6RE. A contaminant in the method blank obscured the detection of endosulfan sulfate in two Pest/PCB samples. Acetone failed technical calibration criteria. Four VOA and eight BNA samples had low internal standard responses. Results were inconsistent for a pair of field duplicates. The two column quantitation results differed by more than 25 percent for three Pest/PCB samples. The data package arrived three days late.

COMMENTS/CLARIFICATIONS REGION 6 CLP QA REVIEW

CASE <u>25159</u>	SDG FFG02	SITE Wilcox Oil	LAB <u>AATS</u>
The following in reporting	is a summary of this CLP data:	sample qualifiers u	sed by Region 6
No.	Acceptable	Provisional	Unacceptable

No	Acceptable	Provisional	<u>Unacceptable</u>
VOA	14	6	
BNA	<u>11</u>	9	
PEST	16	4	

COMMENTS: The case consisted of 20 soil samples for complete RAS organic analysis. The OTR/COC Record designated sample FF-G02 for MS/MSD analyses and samples FF-G07/FF-G08, FF-G17/FF-G18, and FF-G22/FF-G23 as field duplicate pairs. The laboratory analyzed at low levels the VOA/BNA soil samples.

The data package contained the following contractual non-compliances.

BNA sample FF-G06RE was extracted 19 days past the contractual holding time limit. Only sample FF-G06RE is billable even though the laboratory also submitted data for the original analysis FF-G06.

The Pest/PCB method blank PBLKSC had a peak interfering with the detection of endosulfan sulfate above the CRQL on one column.

The data package arrived 3 days late for the contractual 35-day turnaround time.

VOA Samples FF-G11, FF-G13, FF-G15, and FF-G22 and their reanalyses had low internal standard responses. The reanalyses should be used for all except sample FF-G15.

BNA The extraction holding time for sample FF-G06RE was excessive (29 days past collection). Samples FF-G09, FF-G15, FF-G16, FF-G17, FF-G18, FF-G21, FF-G22, and FF-G23 and their reanalyses had low internal standard responses. To minimize data qualification, the reviewer recommends using some results from the original analysis and some from the reanalysis depending on the associated internal standard performance.

Pest/PCB An interfering contaminant in the method blank obscured the detection of endosulfan sulfate in samples FF-G15 and FF-G23.

ORGANIC QA REVIEW CONTINUATION PAGE

CASE 25159 SDG FFG02 SITE Wilcox Oil LAB AATS

Comments (continued)

Acetone, methylene chloride, phenanthrene, pyrene, chrysene, benzo(ghi)perylene, chlordanes, endrin, heptachlor epoxide, endosulfan sulfate, endrin ketone, endrin aldehyde, and endosulfan II were reported in a few samples above the CRQL's. Some results are provisional for six VOA, nine BNA, and four Pest/PCB samples because of problems with holding time, calibration, blank contamination, field duplicate consistency, internal standard responses, and compound quantitation.

The technical usability of all reported sample results is appropriately indicated by ESAT's final data qualifiers in the attached Data Summary Tables. An Evidence Audit was conducted for the Complete Sample Delivery Group File (CSF), and the Evidence Inventory Checklist is attached to this report.

NOTE: THE FOLLOWING REVIEW NARRATIVE ADDRESSES BOTH CONTRACTUAL AND TECHNICAL ISSUES. THE ASSESSMENT MADE FOR EACH QC PARAMETER IS SOLELY BASED ON THE TECHNICAL DATA USABILITY, WHICH MAY NOT NECESSARILY BE AFFECTED BY CONTRACTUAL PROBLEMS.

1. Holding Times: Provisional. All samples met the contractual holding time requirement except as follows. No technical holding time criteria exist for soil samples.

BNA sample FF-G06RE was extracted 29 days after collection and receipt. In the reviewer's opinion, all results are estimated and biased low because of the excessive holding time.

- 2. Tuning/Performance: Acceptable. The BFB and DFTPP analyses met GC/MS tuning criteria. The VOA and BNA sample analyses were within 12 hours of the respective BFB/DFTPP analyses. The Pest/PCB analyses met performance guidelines.
- 3. Calibrations: Provisional. Target compounds met contractual calibration criteria. The acetone result is estimated in VOA sample FF-G17 because of a technical %D calibration deficiency.

Pest/PCB The reviewer was unable to reproduce the following calibration results on both analytical columns based on the raw data submitted:

the TCX and DCB initial calibration factors; and

the TCX and DCB calculated amounts in all INDAM/INDBM calibration verification analyses.

ORGANIC QA REVIEW CONTINUATION PAGE

CASE 25159 SDG FFG02 SITE Wilcox Oil LAB AATS

Calibrations, Pest/PCB (continued)

The results reported by the laboratory differed consistently by a factor of two from the reviewer-calculated ones. The reviewer did not qualify results because the reported %RSD and %D values were not affected. However, the laboratory was contacted for clarification of this discrepancy.

4. Blanks: Provisional. The VOA and BNA method and storage blanks met contractual requirements.

BNA The method blanks contained phthalates below the CRQL's. In the reviewer's opinion, all "B"-flagged laboratory results should be considered as undetected (U) because the sample concentrations were less than 10X the associated blank concentrations.

Pest/PCB Soil method blank PBLKSC contained a peak above the CRQL that interfered with the identification of endosulfan sulfate on one column. The reviewer qualified as undetected the endosulfan sulfate results in associated samples FF-G15 and FF-G23 because of possible laboratory contamination.

In the reviewer's opinion, the following results should be used as raised quantitation limits because of the presence of the analyte in the associated method blanks (below the CRQL's) on one or both columns:

endrin aldehyde in sample FF-G12; and

y-chlordane in sample FF-G17.

The y-chlordane result in sample FF-G18 is biased high and "B" flagged because of possible laboratory contamination.

5. System Monitoring Compounds (SMC)/Surrogates: Acceptable. The SMC and surrogate recoveries met QC criteria except as follows.

BNA Sample FF-G06 had high recoveries for two base-neutral surrogates. The re-extraction had acceptable recoveries and should be used.

Samples FF-G17RE, FF-G18RE, FF-G21RE, and FF-G22RE had high recoveries for two base-neutral surrogates. No results were qualified for the high recoveries as no analytes were detected above the CRQL's in these samples.

ORGANIC QA REVIEW CONTINUATION PAGE

CASE 25159 SDG FFG02 SITE Wilcox Oil LAB AATS

5. System Monitoring Compounds (SMC)/Surrogates (continued)

Pest/PCB All reported surrogate recoveries were a factor of two lower than the reviewer-calculated ones. This problem is a consequence of the incorrect calibration factors reported for the initial calibrations (see section 3). All surrogate recoveries were within QC limits based on the reviewer's calculations.

6. Matrix Spike/Matrix Spike Duplicate: Acceptable. The MS/MSD analyses met recovery and precision requirements for all fractions.

7. Other QC:

Field Duplicates: Provisional. The acetone and methylene chloride results are estimated in field duplicates FF-G17 and FF-G18 because of inconsistent concentrations (differ by a factor of two or more). Other field duplicate results were consistent.

8. Internal Standards: Provisional. The internal standard (IS) responses and retention times were within the QC limits with the following exceptions.

VOA Samples FF-G11, FF-G13, FF-G15, and FF-G22 were reanalyzed because of low IS responses. The reanalyses had low but improved responses for samples FF-G11, FF-G13, and FF-G22, so the reanalysis data should be used. The original analysis data should be used for sample FF-G15.

Results are estimated and quantitation limits biased low for analytes associated with the following IS's because of the low IS responses:

Sample	IS
FF-G11RE	IS3
FF-G13RE	IS1, IS3
FF-G15	IS2, IS3
FF-G22RE	IS3

BNA Sample FF-G06 had low internal standard responses, but the reanalysis had acceptable responses, and data should be used. Sample FF-G02MSD had one low IS response, but reanalysis was not required.

ORGANIC QA REVIEW CONTINUATION PAGE

CASE 25159 SDG FFG02 SITE Wilcox Oil LAB AATS

8. Internal Standards, BNA (continued)

Samples FF-G09, FF-G15, FF-G16, FF-G17, FF-G18, FF-G21, FF-G22, and FF-G23 and their reanalyses had outlying IS responses. To minimize data qualification, the reviewer recommends using some results from the original analysis and some from the reanalysis depending on the associated IS performance. The results designated for use are indicated on the attached data summary tables.

The reviewer qualified results as estimated and quantitation limits biased low for analytes associated with the following IS's because of the low IS responses:

<u>Sample</u>		IS		
FF-G09	IS6		-	
FF-G15	IS4,	IS5,	IS6	
FF-G16	IS4,	IS5,	IS6	
FF-G17	IS5,	IS6		
FF-G18	IS5,	IS6		
FF-G21	IS5,	IS6		
FF-G22	IS4,	ISS,	IS6	
FF-G23	IS5,	IS6		

9. Compound Identity/Quantitation: Provisional. Acetone, methylene chloride, phenanthrene, pyrene, chrysene, benzo(ghi)-perylene, chlordanes, endrin, heptachlor epoxide, endosulfan sulfate, endrin ketone, endrin aldehyde, and endosulfan II were reported in a few samples above the CRQL's. Compound identification and quantitation met contractual guidelines for the VOA and BNA samples. GC/MS confirmation was not feasible for the Pest/PCB positive results.

Pest/PCB The "P" flagged results above CRQL's are estimated in samples FF-G15, FF-G17, FF-G18, and FF-G23 because the quantitation results between the two columns differ by more than 25 percent.

10. Performance/Completeness: Acceptable. The laboratory response to the CCS request was received and should be used. The data package was complete with minor deficiencies. The laboratory was contacted for correction and resubmission (see attached FAX Record Log).

ORGANIC QA REVIEW CONTINUATION PAGE

CASE 25159 SDG FFG02 SITE Wilcox Oil LAB AATS

11. Overall Assessment: Data are acceptable for 14 VOA, 11 BNA, and 16 Pest/PCB samples.

VOA Some results are estimated for samples FF-G11RE, FF-G13RE, FF-G15, FF-G17, FF-G18, and FF-G22RE because of a calibration deficiency, inconsistent field duplicate results, and low internal standard responses.

BNA Some results are estimated for samples FF-G06RE, FF-G09, FF-G15, FF-G16, FF-G17, FF-G18, FF-G21, FF-G22, and FF-G23 because of a holding time problem and low internal standard responses.

Pest/PCB Some results are estimated for samples FF-G15, FF-G17, FF-G18, and FF-G23 because of blank contamination and compound quantitation deficiencies.

ORGANIC DATA QUALIFIER DEFINITIONS

The following definitions provide brief explanations of the ESAT-Region 6 qualifiers assigned to results in the Data Summary Table.

- U Not detected at reported quantitation limit.
- N Identification is tentative.
- J Estimated value.
- R Unusable.
- Actual concentration may be lower than the concentration reported.
- V Low biased. Actual concentration may be higher than the concentration reported.
- F+ A false positive exists.
- F- A false negative exists.
- B This result may be high biased because of laboratory/field contamination. The reported concentration is above 5X or 10X the concentration reported in the method/field blank.
- **UJ** Estimated quantitation limit.
- T Identification is questionable because of absence of other commonly coexisting pesticides.
- * Result not recommended for use because of associated QA/QC performance inferior to that from other analysis.

Case No.: 25159 [_ _ _ _ _ _ _

FFG02 SDG:

M. Missler Reviewer:

Laboratory: AATS

Matrix:

SOIL

Units:

ug/Kg

VOLATILES	FLAG	FĹAG_	FLAG	FLAG	FLAG	FLAG_	FLAG
EPA SAMPLE NUMBER:	FF-G02	FF-G03	FF-G04	FF-G05	FF-G06	FF-G07	FF-G08
Chloromethane	12 U .	12 U	13 U	12 U	. 13 A	13 0	13 Ū
Bromomethane	12 U	12 U	13 U	12 U	. 1.3 . U	13 U	13 0
Vinyl chloride	12 U	12 U	13 0	12 U		_ 13 U	13 U
Chloroethane	12 U	12 U	13 U	12 U	13 U	13 U	. 13 U
Methylene chloride	1 J	- 1 J	2 J	. 2 J	13 U	1.3 U	2 J
Acetone	12 U	12 U	13 U	12 U	_ 13 U	13 U	13 U
Carbon disulfide	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,1-Dichloroethene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,1-Dichloroethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,2-Dichloroethene (total)	12 U	12 U	13 U	12 U	13 B	13 U	13 U
Chloroform	12 U	12 U	13 U	12 U	13 U	1.3 U	13 U
1,2-Dichloroethane	12 U	12 U	13 U	12 U	13 U	13 Ŭ	13 U
2-Butanone		12 U	13. Ū .	12 U	13 U.	13 0	. 13 U
1.1.1-Trichloroethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Carbon tetrachloride	12 U	12 U .	13 U.	12 U	13 U	13 U	13 U
Sromodichloromethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,2-Dichloropropane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
cis-1,3-Dichloropropene	12 U	. 12 U	13 U	12 0	13 U	13 U	13 U
Trichloroethene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Dibromochloromethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
1,1,2-Trichloroethane	12 U	12 U	13 U	12 U	13 0	13 U	13 U
Benzene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
trans-1,3-Dichloropropene	12 U	12 U	13 U	12 U	13 U	13 U.	13 U
Brownform	12 U	12 U	13 U	12 U	13 U	13 U	13 T
4-Methyl-2-pentanone	12 U	12 U	13 U	12 V	13 U	13 U	13 U
2-Hexanone	12 U	12 T	13 U	12. U	13 U	13 U	13 0
Tetrachloroethene [12 U	12 U	13 U	12 U	13 U	13 U	13 0
1,1,2,2-Tetrachloroethane	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Toluene	12 U	12 U	13 U	12 U	13 U	13 U	13 0
Chlorobenzene	12 U	12 U	13 U	12 U	. 13 U	13 U	13 0
Ethylbenzene	12 U	12 Ŭ	13 U	12 ΰ	- 13 U	13 U	13 U
Styrene	12 U	12 U	13 U	12 U	13 U	13 U	13 U
Xylenes (total)	12 U	12 U	13 U	12 U	13 U	13 0	13 U
		_	_	_	_		-
Sample wt (g):	5	5	5	5	5	5	5
Moisture:	18	16	21	19	22	25	23
Dilution Factor:	1	1	1	1	1	- 1	1 · ·-
Level:	LOW	LOW	LOW	LOW	LOW	LOW	LOW
İ							•
Number of TIC's:	1-	. 1	1	1	1	0	0

For the results listed in the Data Summary Table, ESAT has replaced the laboratory Note: assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate

the technical usability of the reported results.

Case No.: 25159

SDG:

FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix:

SOIL

Units: ug/Kg

VOLATILES	FLAG	FIAG_	FL	1 6	FLAG_	FLAG	FL2	GFLAG	
EPA SAMPLE NUMBER:	FF-G09	FF-G10	FF-G11	FF-Glir	\$	PF-G12	FF-G13	FF-G13RE	
Chloromethane	14 U	12 U	12 U	* . 33	20	12 U		* 12 UJv	
Sromomerhane	14 U	12 U	12 U	* 17	2 U	12 U	,12 Ū		
Vinyl chloride	14 Ü	12 U	12 ប	* 22	2 U	_ 12 U	12 U	* 12 UJv	·. <u>4</u> . •=
Chloroethane	1 4 U	12 U			ย ย ู	73 A		* 12 UJv	
Methylene chloride	5 J -	- 12 U	5		ַט	12. U		± 28 J	<u> </u>
Acetone	14 U	12 U	12 U	* 13	2 (1)	12 Ū	12 U	* 12 UJv	
Carbon disulfide	14 U	12 U		-	υ	12 U	12 U 12 U		
1,1-Dichloroethene	14 U	12 U			2 0	12 U			-
1,1-Dichloroethane	14 U	12 U	12 U	- 13	ט ס	12 U	12 U	* 12 UJv	
1,2-Dichloroethene (total)	14 U	12 U	12 0		ט ב	12 U	12 U		
Chloroform [14 U	12 U.			ט ב	12 0	12 U		-
1,2-Dichloroethane	14 U	12 U	12 U	• 13	2 0	12 U	12 U	- 12 UJv	-
2-Butanone	14 U	12 U			2 U	12 U	12 ⁻ U	* 12 UJv	·
1,1,1-Trichlorcethane	14 U	12 U			2 U .	12 U		* 12 U	
Carbon tetrachloride	14 U	12 U	12 U	* .23	Z U .	12 0	.12 U	* _12 U	_ ===-
Bromodichloromethane	14 U	12 U	12.0		2 U	12 U		± 12 Ŭ	
1,2-Dichloropropane	14 U	12 U			2 U	12 0		* 12 U	-
cis-1,3-Dichloropropene	14 U	12 U	12 U	* 1:	2 0	12 U	. 12 Ū	* ⁻ 12 U	
Frichloroethene	14 U	12 U			2 U	12 U		* 12 U	
Dibromochloromethane	14 U	12 U	12 U		2 U	12 U		* 12 0	
1,1,2-Trichloroethane	14 U	12 U	12 U	* . 13	2 U	12 U	12 Ü	* 12 Ū	
Benzene	14 Ŭ	12 U	12 U			1.2 U		* 12 U	
trans-1,3-Dichloropropene	14 U	12 U	12 U	-	2 U	12 U		+ 12 U	
Bromoform	14 U	12 U	12 U	_* . 1	2 U .	12 U	1.2 U	* 12 U	property
4-Methyl-2-pentanone	14 U	12 U	12 U		2 UJv	12 U		* 12 UJv * 12 UJv	
2-Hexanone	14 U	12 U	12 U		2 UJv	12 <u>U</u>			-
Tetrachloroethene	14 U	12 U	12 U	* 1	2 UJv	12 U	12 U	- 12 007	
1,1,2,2-Tetrachloroethane	14 U	12 U			2 บัง	12 U		* 12 UJv * 12 UJv	
Toluene	14 U	12 U	12 U		2 UJV	. 12 U			_ ==
Chlorobenzene	14 U	12 U	12 🖰	* 1	2 บาง	12 U	12 Ų	- 12 007	
Ethylbenzene	14 U	12 U	12 U		2 เมง	12 U	12 U	* 12 UJv * 12 UJv	
Styrene	14 U	12 U	12 U		2 <i>UJv</i>	12 U			
Kylenes (total) [14 U	12 U	12 U	- 1	2 (J.Jv	12 U	. 12 U	- 12 034	÷
Sample wt (g):	5	5	5		5	. 5	5	5	
∤Moisture:]	29	18	19	1	.9	20	14	14	
Dilution Factor:		1	1		1	1	1.	. 1	
Level:	İ	LOW	LOW			LOW		LOW	
i	j								
Number of TIC's:	i o.	0	0		Œ	0	C	1	

Note:

CREANIC DATA SUMMARY

FFG02 SOIL

Case No.: 25159 Laboratory: AATS

Matrix: SDG:

M. Missler

Reviewer: Units:

ug/Kg

VOLATILES	FILAG	FLAG	FLAG	FLAG	FLAG	FTAG	FLAG	
EPA SAMPLE NUMBER:	FP-G14	FF-G15	FF-G15RE	FF-G16	FF-G17	FF-G18	FF-G21	
Chloromethane		ם ב	11 0 .	D E1.	12 U	12 U	12 U	
Vinyl chloride								
Chloroethane		-	b :		12 U.	12 U	12 U	1
Acetone chloride	12 0	ם נו		13 d	24 88 CI	12 67		
Carbon disulfide	12 U	11 0				12 U		
1,1-Dichloroethene 1,1-Dichloroethane			* * D TT	13 U	7 7 7 7	12.0	1 7 C	
1.2-Dichloroerhene (total)	2.0	11 0	11.0			12 U	12 0	
	12 U	n ti		, D E1	12 0	12.U	D 21	
1,2-Dichloroethane	12 U		ii u i			12 Ŭ _	12 U	
2-Butanone		р 11			12. <u>U</u>	12 U	12 0	
1,1,1-Trichloroethane	12 U		* * t	13 U	21 : D ::		12 U	
carbon tetrachicane		11 m		13 0				
Bromodichloromethane		11 000					12 U	
1,2-Dichloropropane	12 U		ים דו	13 d				
cis-1,3-Dichlozogropene		11 034	11 D	13 U	D 21	12 U		
Trichloroethene		11 000	110 -				, 17 10	
Dibromochloromethane	12 U		• <u>п</u> п			12 U	1 12	
1,1,2-Trichioroechane		11 UZA	11.U *	13 G	12 O	12 0		
Benzene							12 12 13	
trans-1,3-Dichloropropene Browoform	12 d 12 d	11 030		13 d	0 D	12 C		
			•					
4-Methyl-2-pentanone		11 UJV		13 0	17 17 17 18 18	21 D 11	12 U	
Z-mexanone Tetrachloroethene	12 G	11 224	• • • •	0 E	12 12			
	:	:	t :		: :		12 11	
	12 12 12 12 12 12 12 12 12 12 12 12 12 1			13 0		1 C		
Chlorobenzene	12 U	אנט נו	* b Tt		12 U		12 U	
Ethylbenzene	12.0	11 004			12 U			
Styrene	12 U	11 074	#	13 0	12 U	12 U	77 17	
Xylenes (total)		11 034			12 U			
							1	
Sample wt (g):	ហ	ហ	ហ	ហ '		vi	in !	
*Moisture:	18	£1	13	. 24	18	18	18	
Dilution Factor:	Ħ	μł	#		H	ਜ	H	
Level:	LCW	LOW	LOW	LOW	LOW	LOW	LOW	
Number of TIC's:	·. 0	•	0	0	0	0	o .	
_								

Note:

Case No.: 25159

SDG:

FFC02

Periewer: M. Missler

Laboratory: AATS

Matrix:

SOIL

Taits:

ug/Kg

VOLATILES	FLA	LGFLAC	eFlag_	FLAG	FTAG	FLAG_	FLAG
EPA SAMPLE NUMBER:	FF-G22	FF-G22RE	FF-G23	-		-	
Chloromechane	! ! 12 U	* 12 U	12 V		-		
Bromomethane		* 12 U	12 U	-			
Vinyl chloride	12 ປັ		12 U				
Chloroethane	12 U	* 12 U	12 U				-
Methylene chloride	5	* 12 U	12 U		-		
Acetone	1 2 U	* 12 U	12 U				
Carbon disulfide	12 U	* 12 U	12 U	-			
1,1-Dichloroethene	12 U	* 12 U	12 U			-	
1,1-Dichloroethane	12 U	* 12 U	12 U				
1,2-Dichloroethene (total)	12 U		12 U				-
Chloroform	12 U		12 Ü				•
1,2-Dichloroethane	12 U	* 12 U	12 U				
2-Butanone		• 12 U	12 U				
1.1.1-Trichloroethane		* 12 U	12 U		•		. =-
Carbon tetrachloride	12 U	* 12 U	12 U			-	
Bromodichloromethane		* 12 U	12 U				ser e e
1,2-Dichloropropane		* 12 U	12 U		* * *		
cis-1,3-Dichloropropene	12 0	* 12 Ü	12 0 .		-	•	1-
Trichloroethene		• 12 U	12 U				
Dibromochloromethane		* 12 U	12 U				
1,1,2-Trichloroetnane	12 ປັ	* 12 U	12 U	-			
Benzene		* 12 0	12 U			-	•
trans-1,3-Dichloropropene		* 12 U	12 U				
Bromoform	12 U	* 12 U	12 U				
4-Methyl-2-pentanone	12 U	* 12 UJv	- 12 .U				
2-Hexanone	12 U	* 12 ŪJv	12 U		-		-
Tetrachloroethene	12 U	* 12 UJv	12 U				-
1.1,2,2-Tetrachloroethane		± 12 UJv	12 Ū				
Toluene		* 12 UJv	12 0				
Chlorobenzene	12 U	* 12 UJv	12 0				
Ethylbenzene		* 12 UJv	12 U				
Styrene		* 12 UJv	12 0				
Xylenes (total)	12 T	* 12 UJv	12 U				
Sample wt (g):	5	5	5				
%Moisture:	18	18	18				
Dilution Factor:	1	1	1		-		
Level:	LOW	LOW	LOW				
j	i .						
Number of TIC's:	j o, .	0	O		-		

Case No.: 25159

SDG: FFG02

Reviewer: T. M. Missler

Laboracory: AATS

Matrix: SOIL

Cnits:

ug/Kg

semivolatiles	FLAG_	FLAG	FLAG	FLAG_	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G02	FF-G03	FF-G04	FF-G05	FF-G06 F	F-G06RE	FF-G07
Phenol	400 U	390 U	420 Ŭ	410 U	420 U *	420 UJv	440 U
bis(2-Chloroethyl)ether	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2-Chlorophenci	400 U	390 U	42 J	410 U	420 U *	420 UJv	440 U
1,3-Dichlorobenzene	400 U	390 U	· 420 Ū	410 U	420 U *	420 UJv	440 U
1,4-Dichlorobenzene	400 U	390 U	29 J	410 U	420 U *	420 UJv	440 U
1,2-Dichlorcbenzene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2-Methylphenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	.440 U
2,2'-Oxybis (1-chloropropane)	400 U	390 U	420 Ü	410 U	420 U *	420 UJv	440 U
4-Methylphenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
N-Nitroso-di-n-propylamine	400 U	39 0 U	420 U	410 U	420 U *	420 UJv	440 U
Hexachloroethane	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Nitrobenzene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Isophorone	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2-Nitrophenol	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,4-Dimethylphenol	400 U	390 .U	420 U	410 U_	420 U *	420 UJv	440 U
ris(2-Chloroethoxy)methane	400 U	390 U	420 U	410 U	. 420 ਹ *	420 UJv	440 U
2.4-Dichlorophenol	400 U	390 U	_ 420 U	410 U	420 U *	420 UJv	440 U
1,2,4-Trichlorobenzene	400 U	390 U	27 J	410 U	420 U *	420 UJv	440 U
Naphthalene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
4-Chloroaniline	400 U	390 U	420 U	410 U	420 U *	420 UJv	'440 U
Hexachlorobutadiene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
4-Chloro-3-methylphenol	400 U	390 U	34 J	410 U	420 U *	420 UJv	440 U
2-Methylnaphthalene	400 U	390 U	420 U	60 J	420 U _*_	420 UJv	440 U
Hexachlorocyclopentadiene [400 U	390 U	420 U	410 U	420 U *	420 UJv	440 T
2,4,6-Trichlorophenol [400 U	.390 U	420 U	410 U	420 U *	420 UJv	440 U
2,4,5-Trichlorophenol	1000 U	. 99Q. U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
2-Chloronaphthalene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2-Nitroaniline	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
Dimethylphthalate -	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Acenaphthylene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,6-Dinitrotoluene	400 U	390 U	420 U	410 U	- 420 U *	420 UJv	440 U
3-Nitroaniline	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
Acenaphthene	400 U	390 U	32 J	2 2 J	420 U *	420 UJv	440 U
2,4-Dinitrophenol	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1 100 U
4-Nitrophenol	1000 U	990 U	1000 U	1000 A	1100 U *	1100 UJV	1100 U
Dibenzofuran	400 T	390 U	420 U	410 U	420 U *	420 UJv	440 U
2,4-Dinitrotoluene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Diethylphthalate	400 U	390 T	420 U	410 U	420 T *	420 UJv	440 U
4-Chlorophenyl-phenylether	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Fluorene [400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
4-Nitroaniline	1000 Ų	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
4,6-Dinitro-2-methylphenol	1000 U	990 U	1000 U	1000 U	1100 U *	1100 UJv	1100 U
N-Nitrosodiphenylamine	400 U	390 U	420 U	410 U	420 U +	428 UJv	440 U
4-Bromophenyl-phenylether	400 U	390 U	420 U	410 U	420 U *	420 UJV	440 U
Hexachlorobenzene	400 U	390 U	420 U	410 U	420 U *	420 UJv	440 U
Pentachlorophenol	1000 U	990 U	1000 U	1000 U	1100 U *	1100 Wv	1100 U
Phenanchrene	400 U	390 U	420 U	220 J	46 *	420 UJv	440 U
Anthracene	400 ប	390 U	420 U	410 U	420 U *	420 UJv	440 U
l							

CRGANIC DATA SUMMARY

Case No.: 25159

SDG:

Note:

FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix:

-SOIL

Units:

ug/Kg

SEMIVOLATILES		FLAG_		_FLAG_		_FLAG_		FLAG_			_FLA	.G		_FLAG_		_FLAG
EPA SAMPLE NUMBER:	FF-G02		7F-G03		FF-G04		FF-G05	-	FF	-G06	-	FF~G0	6RE		<u>FF</u> -G07	
Carbazole	400	U	390	σ	420	U	410	υ.	_	<u> 4</u> 20	U	•	420	UJV .	440	<u>u</u>
Di-n-butylphthalate	400	ប	. 390	ت .	420	U	410	፱	_	420	U	*	420	UJV	440	U
Fluoranthene	400	U	- 390	σ	420		130	J		420	U	*	420	IJν	440	σ
Pyrene	400	U	390	U	420	U	180	J	_	420	_			WV	440	
Butylbenzylphthalace	35	ŭ	- 36	J	34	J	57	Ĵ		420				IJν	45	
3,3'-Dichlorobenzidine	400	U	390	U	420	U	410	U	-	420	U _	*	420	IJν	440	σ
Benzo(a)anthracene	400	ט	390	Ū.	420	U	100	ت	-	420	σ	+ .	420	ŪĴΨ	440	· · · · · · · · · · · · · · · · · · ·
Chrysene	400	ប	390	U	420	ប	150	J		420	U.	_		₩	440	
ois(2-Ethylhexyl)phthalate	400	ש	390	σ	420	σ	410	U		420	ū	•	420	υJv	440	α .
Di-n-octylphthalate	400	U	390	σ	420	ប	410	ប		420	U			UJv	440	–
Benzo(b) fluoranthene	400	ប	390	ά	420	U	90	J	-	420		•	420	IJv	440	
Benzo(k) fluoranchene	400	U	. 390	Ü	420	U	. 84	_ _	-	420	ប	•	420	VLU	440	U
Benzo(a)pyrene	400	U	390	σ	420	U	100	J		420				UJ v	440	
Indeno(1,2,3-cd)pyrene	400	IJ	_ 390	U	420	U	410	U		420	-		-	UJv	. 440	
Cibenc (a, h) anthracene	400	U	390	U	420	ט	₹10	ū		420	U	* .	420	IJv	440	σ
Benzo(g,h,i)perylene	400	<u> </u>	390	σ	420	σ	410	ប		420	U	* .	120	ŪĴΨ	440	U
Sample wt (g):	30		30		30		30		-	30			30		30	
₹Moisture:	. 18		16		21		19			22			22	-	_ 25	-
Dilution Factor:	1		1		1	-	1			1			1		1	<u>.</u>
Level:	LOW		LOW		LOW		LOW			LOW		1	LOW		LOW	-
Number of TIC's:	10		9		9		. 22			20			35		33	-

ORGANIC DATA SUMMARY

Case No.: 25159 . _____

SDG:

_ FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units:

ug/Kg

SEMIVOLATILES	FLAG	F	'LAG	FLA	G	FLAG	·	_FLAG	FLAG		FLAG
EPA SAMPLE NUMBER:	FF-G08	FF-G09	FF-G09	Œ	FF-C	310	FF-G11	FF-G	Ļ 2	FF-G13	
Phenol - I	430 U	460 U	1 + 4	50 J	4	100 U	410	U 4:	LO U	380	U
bis(2-Chloroethyl)ether	430 U	460 U		50 T		100 U	410		LQ_U	380	σ
2-Chlorophenol	430 U	460 U		0 U		00 U	410	.U .4:	το ˙Ω.	380	U
1,3-Dichlorobenzene	430 U	460 U	J + 4	10 U	4	100 U	410		ιο υ	_380	
1,4-Dichloropenzene	430 U	460 U		20 A		100 U	410	_	LO U	380	
1,2-Dichlorobenzene	430 U	460 U	J = 4	0 U	4	100 U	. 410	U 4:	ro a	380	U
2-Methylphenol	430 U	460 T		U 0		00 U	410 410	-	10 U	380 380	
2,2'-Oxybis(1-chloropropane) 4-Methylphenol	430 U 430 U	460 U 460 U		0 U		00 U	410	-	רטַ ָּט	380	
İ					_		4.5.0	** 4		200	**
N-Nitroso-di-n-propylamine	43u U	460 U		0 U		00 U	410		LO U	380 _. 380	
Hexachloroethane Nitrobenzene	430 U	460 U	•	10 U		00 U	410 410	-	נט ט	380	
Artrobenzene	430 U	400 0	4.	. .	4	.00 0	410	0 1.		200	_
Isophorone	430 U -	460 U	_	0 T.		U 00.	410	_	נס ט	380	
2-Nitrophenol	430 U	460 U		10 C		U 00	410		נס ט	380	
2,4-Dimethylphenoi	430 U	460 U	1 + 4	10 J.	4	00 U	410	U 4.	LO U	380	U
bis(2-Chloroethoxy)methane	430 U	460 U	T * 40	O_U	4	00 U	410	U 4	רס מ	380	℧ ຺
2.4-Dichlorophenol	430 U	460 U	r + 40	10 U	4	U 00	410	U 43	LO U	380	
1,2,4-Trichlorobenzene	430 U	460 U	* 4	10 U	4	00 U	410	U . 43	LOU.	380	U
Naphthalene	430 U	460 U	r + 40	10 U	4	.00 U	410	Ų 4:	LO U	380	
4-Chloroaniline	430 U	460 U	「 * 4.0	T 0	4	U 00.	410	_	נס ט	380	
Hexachlorobutadiene	430 U	460 U	* 40	0 U	4	U 00	410	្ឋ 4:	LO U	380	Ū
4-Chloro-3-methylphenol	430 U	460 U	r * 40	10 U	4	.00 U	410	•	LO U	380	-
2-Methylnaphthalene	430 U	460 U		10 U		U 00	410		נס ס	380	-
Hexachlorocyclopentadiene	430 U	460 U	r 40	io U	* 4	U 00.	410	U 43	LO U	380	U
2,4,6-Trichlorophenol	430 U	460 U		0 U		00 U	410	-	LO U	380	
2,4,5-Trichlorophenol	110 0 U	1200 U				100 U	1,000		00_U	960 380	
2-Chloronaphthalene	430 U	460 U	1 4	O U	* 4	100 U	410	U 4.	LO U	300	·
2-Nitroaniline	1100 U	1200 U		ט ס		00 U	1000	_	00 U 10 U	960 380	
Dimethylphthalate	430 U	460 U				100 U	410	-	10 U	380	
Acenaphthylene	430 U	460 U) 1	50 U	•	100 U	410		10 0		
2,6-Dinitrotoluene	430 U	460 U				100 U	410	_	10 U	380 960	
3-Nitroaniline	1100 U	1200 U				000 U	1000 410		10 U	380	
Acenaphthene	430 U	460 U	, 4	50 U	•	100 U	410		10 0	305	-
2,4-Dinitrophenoi	1100 U	1200 0	J 12	00 U	* 10	U 000	1000	-	00 U	960	
4-Nitrophenol	1100 U	1200 t		00 U		T 000	1000		00 U	960	
Dibenzofuran j	430 U	460 t	J 4	50 U	*	100 U	410	10 4	10 U	380	U
2,4-Dinitrotoluene	430 U	460 T		60 U		400 U	410		10 U	380 380	
Diethylphthalate	430 U	460 0		60 U		400 U	410	-	10 U	380	
4-Chlorophenyl-phenylether	430 U	460 T	3 4	60 U	*	400 U	410	10 4	10 U	300	•
Fluorene	430 U	460 t		60 U		400 U	410		10 U 00 U	380 960	
4-Nitroaniline	1100.0	1200 0		00 U		000 T	1000		00 U	960	
4,6-Dinitro-2-methylphenol	1100 U	1200 (J 12	00 U	- 1	000 U	1000				
N-Nitrosodiphenylamine	430 U	460 0		60 U		400 U			10 U	380 380	
4-Bromophenyl-phenylether Hexachlorobenzene	430 U 430 U	460 t		60 U		400 U 400 U		-	10 0	380	
nexachiorobenzene	430 0	400 (- 4	- U		400 U	410				
Pentachlorophenol	1100 U	1200		00 U		000 U	1000		00 U 34 J	960 380	
Phenanthrene Anthracene	210 J 430 U	460 t 460 t		60 U 60 U		400 U 400 U) ប) ប	10 U	380	
AILITECTIC	1 130 0	400 (u 4	00 U	-		416	, ,			-

ORGANIC DATA SUMMARY

Case No.: 25159

SDG:

- : EFGC2 _____

Reviewer: M. Missler

Laboratory: AATS

Matrix:

SOIL

Units:

ug/Kg

SEMIVOLATILES	FLAG	FLAG	FLAG	FLAG_	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G08	FF-G09 . FF-G09	RE	FF-G10	FF-G11	FF-G12	FF-G13
Carbazole	46 J -	- 460 U 4	60 Ü .±	. 400 U	. 410 U	410 U .	.380 U
Di-n-burylphthalate	430 U	460 U 4	60 U *	400 U	410 U	23 J	.380 U
Fluoranthene	240 J	460 U 4	60 U +	400 U	. 410 U	. 58 J	380 U
Pyrene	170 J	49 J	43 +	400 U	410 U	62 J	,380 U
Butylbenzylphthalate	48 J	29 J	32 *	400 U	25 ປັ	21 J	.380 T
3,3'-Dichlorobenzidine	430 U	460 U _ 4	60 U ★	400 U	410 U	410 U	:380 U
Benzo (a) anthracene	430 U	460 U. 4	60 U ±	_ 400_ U	410 U	36 J	_ 380 U
Chrysene	96 J	49 J	44 *	400 U	410 U	50 J	38 0 U
bis(2-Ethylhexyl)phthalate	430 U	460 U _4	eo 0 -	400 U	410 U	410 U	380 U
Di-n-octylphthalate	430 U	_ 460 UJv	60 U *	40.0. U	410 U	410 U	380 U
Benzo (b) fluoranthene	430 U	31 J	29 *	400 U	410 U	42 J	380 U
Benzo(k) fluoranthene	430 U	31J	29 *	_400 U	410 U	51 J	380 U
Benzo(a)pyrene	430 U	27 J	24 +	400 U	410 U	36 J	- 380 U
Indeno(1,2,3-cd)pyrene	430 U	460 UJv . 4	50 U *	400 U	410 U	410 U	. 380 U
Dibenz(a,h)anthracene	430 U	460 UJV4	50 U +	400_ U	_410 U	410 U	380 U _
Senzo(g,h,i)perylene	430 U	460 UJV .4	50 U *	400 U .	410 U	410 U	380 Ü
Sample wt (g):	30	30	30 .	30	. 30	30	- 30
%Moisture:	23	29	29	18	19	20 .	14
Dilution Factor:	1	1	1	ı	1	ı	1
Level:	LOW	LOW LA	W	LOW	LCW	LCW	LOW
Number of TIC's:	35 -	33	28 -	21	·35	25	35
·							

Case No.: 25159 Tal.

SDG:

FFG02

Réviewer: M. Missler .

Laboratory: AATS

Matrix: SOIL

Units:

ug/Kg

•										-	
SEMIVOLATILES	FLAG_		TLAG	_FLAG		FLAG	_FLAG_	F:	LAG	FL	AG .
EPA SAMPLE NUMBER:	FF-G14	FF-G15	FF-G15RE		FF-G16	FF-G16RE		FF-G17	FF-G17	RE	
Phenol I	400 U	380 T	J 380	· [] *	430	U 430	II +	400 U	* 4	100 U	
bis (2-Chloroethyllether	400 U	-380 T			430	-	_	400 U		00 U	
2-Chlorophenol	400 U	380 U		U +	430	-	Ū •	400 U		00 U	
	400 0	300 0	, - 500		430		_		•		
1.3-Dichlorobenzene	400 U	380 0	T 380	ʊ •	430 1	U 43 <u>0</u>	℧ *	400 U	* 4	00 U	
1,4-Dichlorobenzene	400 U	380 U	380	ប *	430 1	U 430	Ծ.★	400° U	* _ 4	00 U	
1,2-Dichlorobenzene	400 U	380 0	T 38 0	<u>"</u>	430 1	U 430	ប *	400.U	* .4	00 U	
2 Marchael-h1							_	400 17		AA 11	
2-Methylphenol	400 U	380 U			_ 61	=	*. * 11	400 U	-	00 U	
2.2'-Oxybis(1-chloropropane) 4-Methylphenol	400 U	380 U			430 (ј 430 ј 100		400 U		00 U	
4-Mechyiphenot	400 U	380 U	380	3 +	94	3 100	_	400 U	7 4	.00 0	
N-Nitroso-di-n-propylamine	400 U	380 0	r 380	U *	430 9	J 430	υ *	400 U	* 4	U 00	
Hexachlorcethane	400 U	380 U	380	U *	430 (430	U *	400 U	· 4	00 U	-
Nitrobenzene	400 U	380 U	T 380	U *	430 (J _. 430	ŭ +	400 U	* _4	00 U	
1											
Isophorone	400 U	380 U			430 (<u>U *</u>	400 U		00 U	
2-Nitropnenol	400 U	380 U			430 (T .	400 U		00 U	_
2,4-Dimethylphenol	400 U	380 U	380	U *	360	J - 380	. •	400 U	• 4	00 U	
bis(2-Chloroethoxy)methane	400 U	380 U	380	U *	430 (U 430	υ *	400 U	+ 4	00 U	
2,4-Dichlorophenol	400 U	380 0			430 (400 U		00 U	
1,2,4-Trichlorocenzene	400 U	380 U			430 1			400 U		00 U	-
i		• • • •		_					•		
Naphthalene	400 U	81	J 380	υ *	430 (J 430	ਹ *	400 Ü	* 4	00 U	
4-Chloroaniline	400 U	380 U	380	U *	430 (J 430	u +	400 U	• 4	00 U	
Hexachlorcbutadiene	400 U	380 U	380	U *	430 (J 430	U *	400 U	* 4	00 U	
4 Ohlana 3 v mb 2 1				••		- 430		400 57		40 FF	
4-Chloro-3-methylphenol	400 U	380 U			430 (U *	400 U		00 U	
2-Methylnaphthalene	400 U	. 200 380 U			430 t		υ ÷	400 U		00 U	
Hexachlorocyclopentadiene	400 U	380 0	380	U -	430 (. 430	u .	400 U	' -	00 0	
2,4,6-Trichlorophenol	400 U	380 U	380	U +	430 1	U430	U *	400 U	4	00 T	*
2.4.5-Trichlorophenol	1000 U	950 U	950	υ *	1100 1	J 1100	ប *	1000 U	10	00 U	•
2-Chloronaphthalene	400 U	380 U	- 380	u •	430 1	U 430	ס •	400 U	4	100 U	*
1											
2-Nitroaniline	1000 U	950 U			1100 1			1000 U			*
Dimethylphzhalate	400 U	380 U			430 (400 U		00 U	*
Acenaphchylene	400 U	380 U	380	υ •	430 (U 430	ט -	400 Ü	4	100 U	*
2,6-Dinitrotoluene	400 U	380 U	380	п •	430	U 430	u *	400 U	4	100 U	*
3-Nitroaniline	1000 U	950 U		_	1100			1000 U			*
Acenaphthene	400 U	380 T		υ ÷	430		Ū •	400 U		LOO U	•
i											
2,4-Dinitrophenol	1000 U	95 0 U	950	U *	1100	U 1100	U *	10 0 0 U		100 U	*
4-Nitrophenol	1000 U	950 0			1100			1000 U		300 U	*
Dibenzofuran	400 U	380 0	380	U *	430	Ū 430	υ •	400 U	•	100 U	•
7 A-Dinitronalucas	400 17	200 5	700	t *	430	77 430	π .	400 U		100 U	*
2,4-Dinitrotoluene Diethylphthalate	400 U 400 U	380 U 380 U		T *			υ ·	400 U		100 U	
4-Chlorophenyl-phenylether	400 U 400 U	380 U		י טיי			υ ·	400 U		400 U	
	400 0	360 0			770		•	100 0			
Fluorene	400 U	380 0	380	υ •	430	U 430	U +	400 U	r ·	400 U	*
4-Nitroanuline	1000 T	950 C	7 950	U *	1100	U 1100	η .	1000 U	1	000 T	*
4,6-Dinitro-2-methylphenol	1000 U	950 T	IJv 950	U *	1100	UJv 1100	U *	1000 U	1	000 T	*
<u> </u>											
N-Nitroscdiphenylamine	400 U	380 T) U *			U *			400 U 400 U	
4-Bromopnenyl-phenylecher	400 U	380 T) U •			U *			400 U	
Hexachlorobenzene	, 400 U	3 80 T	.uv 180) U *	430	UUV 4.30	U •	400 U	•	-00 U	-
Pentachlorophenoi	1000 U	95 0 t	JJv 950) U +	1100	UJv 1100	U +	1000 0	, 1	000 U	•
Phenanthrene	400 U	790					ับ •			400 U	
Anthracene	400 U	380 T		. u			י ט			400 U	•

ORGANIC DATA SUMMARY

Case No.: 25159

FFG02

Reviewer: M. Missler

Laboratory: AATS

Matrix:

SOIL

Units:

ug/Kg

SEMIVOLATILES	FLAG	FLA	G	_FLAG	FLAG	FLAG_	FLAG	FLAG
EPA SAMPLE NUMBER:	 FF-G14	FF-G15	FF-G15RE	FF	F-G16	FF-G16RE	FF-G17 !	FF-G17RE
Carbazole	400 U	380 UJV	380	U *	430 UJv	430 U *	400 U	400 U *
Di-n-bucylphthalate	400 U	380 UJv	57	*== -	430 UJv	100 -	. 400 U	400 U *
Fluoranthene	400 U	380 Wv	110	•	430 UJv	430 U 🛧	400 U	. 400 U ★
Pyrene	400 U	560 J	590	. *	430 UJv	430 U •	25 J	. 400 U *
Butylbenzylphthalate	400 U	-380 UJv	380	U -	100 J	. 430 U *.	53 J	56 *
3,3'-Dichlorobenzidine	400 U	380 UJv	. 380	υ •	430 JJv	430 U. *.	400 UJv	400 U *
Benzo (a) anthracene	400 U	300 J	280	*	90 J	430 U *	400 UJv	400 ਧੁ *
Chrysene	400 U	690 J	670	*	430 UJV	_110 *	41 J	_40 *
bis(2-Ethylhexyl)phthalace	400 T	380 UJv	380	ŭ* =	_430 UJv	430 U *	400 UJ√	62 .
Di-n-octylphthalate	400 U	380 UJv	.380	u *	27 J	430 U =	400 UJv	. 400 U .*_
Benzo (b) fluoranchene	400 U	230 J	210	*	430 UJv	430 U *	400 UJv	400 U *
Benzo(k) fluoranthene	400 U	380 UJv	. 58	•	430 UJv	430 U .*.	. 400 UJV.	. 400 U *
Senzo (a) pyrène	400 Ü	. 250 ເປັ	. 240	•	150 J	160 *	400 UJv	400 U *
Indeno(1,2,3-cd)pyrene	400 U	380 UJV	380	-	430 ŬJ∨	430 U *	400 UJv	400 U .*
Dibenz(a,h)anthracene	400 U	380 UJv	380	ਹ *:	430 UJv	430 U *	400 UJv	400 U .*
Benzo(g,h,i)perylene	400 U	.440 J	380	υ •	430 UJv	430 U . *	400 MJv	400 <u>U</u> *
Sample wc (g):	30	30 -	30	Į.	. 30	30	30	30 .
%Moisture:	. 18	13	13	-	_ 24 · ·	24 -	18	18
Dilution Factor:	1	. 1	1		1	1	1	1
Level:	LOW	LOW	LOW		LOW	LOW	LOW	TOM
Number of TIC's:	22	35	35		35	.35	29	22

ORGANIC DATA SUMMARY

Case No.: 25159

SDG:

FFG02

. Reviewer:

M. Missler

Laboratory: AATS

Matrix:

SOIL

Units:

ug/Kg

SEMIVOLATILES	ļ	_FLAC	3	_FLAG	<u> </u>	fl	AG_	-	_FLAG	I	_FLAC	<u> </u>	_FLi	AG_		_FLAG
EPA SAMPLE NUMBER:	 FF-G18		FF-G18RE		FF-G2	L	F	F-G21RE		FF-G22		FF-G22RE			FF-G23	
Phenol	i 1 400	u ·	100	ri .	400	ם כ		400	TT	400	U	400	(I		400	T
bis(2-Chloroethyl)ether	400			α		ט כ	*	400		400		400		*	400	
2-Chlorophenol	400					Ū	•	400		400		400		•	400	_
1,3-Dichloropenzene	400	U •	400	TT	400) U		400	ΙΤ	400	11	400	TT	÷	400	Ū
1,4-Dichlorobenzene	400	_		_		ט כ	*	400		400		400			400	
1,2-Dichlorobenzene	_	υ·					*	400		400		400	-	•	400	
2-Methylphenol	400	U •	400	tī	400) U	*	400	IJ	400	tī	400	U	*	400	U
2,2'-Oxybis(1-chloropropane)	400	_					*	400		400		400	_	*	400	
4-Methylphenol		υ +	400	Ū			*	400		400	U	400	Ū	*	400	ū
N-Nitroso-di-n-propylamine	- 30	U *	400	U	400	U	*	400	U	400	U	400	IJ	*	400	ប
Hexachlorcethane	400	U *	400	U	400	U	*	400		400	Ū	400	U_	*	400	U
Nitrobenzene . j	400	U *	400	Ü	400	Ü	*	400	U	400	σ	400	Ū	*	400	ប
Isophorone	400	Ծ *	. 400	U	400	σ		400	υ.	400	U	400	U		400	U
2-Nitrophenol	400	ប *	400	U	400	U	*	400	ט	400	U	400	Ü	*	400	U
2,4-Dimethylphenol	400	י ט	400	U	-400	U	*	400	U	400	ט	400	U	*	400	u
bis(2-Chloroethoxy)methane	400	* ט	400	Ū	400	σ	•	400	ប	400	U	400	U	*	400	U
2.4-Dichlorophenol	400	U +	400	U	400	U	*	400	U	400	U	400	σ	•	400	. U
1.2,4-Trichlorobenzene	400	U -	400	a	400	U	*	400	U	400	U	40Ò	U	*	400	U
Naphthalene !	400	U +	400	U	400	U	*	400	U	400	U	400	U	*	400	U
4-Chloroaniline	400	U *	400	υ	400	U	*	400	o d	400	U	400	U	*	400	ប
Hexachlorobutadiene	400	υ -	400	ט	400	U	*	400	U	400	U	400	U	*	400	Ū
4-Chloro-3-methylphenol	400	ד •	400	U	400	U	•	400	U	400	υ	400	U	*	400	υ
2-Methylnaphthalene	400	T *	. 400	U	400	U	*	400	U	400	σ	400	U	*	400	Ţ
Hexachlorocyclopentadiene	400	Ū	400	σ *	400	U		400	υ *	400	ប	400	U	*	400	U
2.4,6-Trichlorophenol	400	υ .	. 400	u •	. 400	Ú		400	ਹ •	400	ប	400	U	•	400	U
2,4,5-Trichlorophenol	1000	U	1000	u .	1000	U		1000	U +	1000	U	1000	U	*	1000	U
2-Chloronaphthalene	400	U	400	ប *	400	U		400	ប *	400	Ü	400	U	*	400	U
2-Nitroaniline	1000	U	1000	u •	1000	U		1000	U *	1000	ប	1000	U	*	1000	U
Dimethylphthalace	400	Ū	400	U *	400	Ü		400	υ •	400	U	400	U	•	400	
Acenaphthylene	400	Ū	400	u *	400	U		400	U *	400	U	400	U	*	400	U .
2,6-Dinitrotoluene	400		400		400			400		400		400	_	*	400	
3-Nitroanzline	1000	_	1000		1000	_		1000		1000		1000		*	1000	
Acenaphthene	400	U	400	ប *	400	U		400	U +	400	σ	400	U	*	400	U
2,4-Dinitrophenol	1000	U	1000	υ +	1000	U		1000	ប +	1000	σ	1000	υ	•	1000	U
4-Nitrophenol	1000	Ū	1000	υ •	1000	U		1000	ប +	1000	ប	1000	σ	Æ	1000	U
Dibenzofuran	400	U	400	U +	400	ŭ		400	* ט	400	Ū	400	Ū	*	400	σ
2,4-Dinitrotoluene	400	υ	400	υ •	400	σ		400	υ +	400	U	400	U	•	400	U
Diethylphthalate	400	Ū	400	T *	400	U		400	U +	400	U	400	U	*	400	U
4-Chlorophenyl-phenylether	400	Ū	400	υ •	400	ŭ		400	u •	400	U	400	U	*	400	U
Fluorene	400	IJ	400	ט *	400	U		400	U *	400	U	400	U	*	400	σ
4-Nitroaniline	1000	U	1000	Ծ *	1000	U		1000	U *	1000	U	1000			1000	
4,6-Dinitro-2-methylphenol [1000	U	1000	υ •	1000	U		1000	σ •	1000	ωv	1000	u	٠	1000	U
N-Nitrosodiphenylamine	400	ប	400	บ *	400	U		400	u •	400	UJv	400			400	
4-Bromophenyl-phenylether	400	ប	400	ช *	400	U		400	Ū *	400	ÜJv	400			400	
Hexachlorobenzene	400	U	400	Ω .	400	U		400	σ -	400	UJv	400	U	•	400	ŭ
Pentachlorophenol	1000	U	1000	u +	1000	ម		1000	v •	1000	IJν	. 100 0			1000	σ
Phenanthrene	400	U		U *	400	U		400	u •	400	VLU					J
Anthracene	400	U	400	U *	400	ט נ		400	U •	400	ŭĵv	400	U	*	400	U

GRGANIC DATA SUMMARY

Case No.: 25159

SDG:

Reviewer: M. Missler ____

Laboratory: AATS

Matrix:

FFG02 SQIL

__ Units:

ug/Kg

SEMIVOLATILES	FLA	.GFLAG_	FLA	.GFLA	.GFLA	GFLAG_	FLAG	,
EPA SAMPLE NUMBER:	FF-G18	FF-G18RE	FF-G21	FF-G21RE	FF-G22	FF-G22RE	FF-G23	<u> </u>
Carbazole	400 U	400 U *	400 U	400 U	+ 400 UJv		400 U	
Di-n-butylphthalate	400 U	400 U *	30 J	27	* 400 UJV		400 U	
Fluoranthene	400 U	400 U *	400 U	400 U	* _ 400 UJy	400 <u>U</u> *	400 U	- ':
 Pyrene	 38 J	400 U *	26 J	400 U	± 400 UJv		94 J	-
Butylbenzylphthalate	45 J	. 51 *	. 35 ปี	400 U	± 400 UJv		S9 J	
3,3'-Dichlorobenzidine	400 UJv	. 400 U *	400 UJv	400 D	± 400 UJv	400 ℧ *	400 UJv	=
Benzo (a) anthracene	 400 UJv	400 U *	. 400 UJv	- 400 U	±_ 400 UJv		400 UJv	
Chrysene	26 J	26 *	22 J	- 400 U	* 400 UJV		82 J	
bis (2-Ethylhexyl) phthalate	400 UJv		400 UJ	87	± 400 ŪĴv	400 0 *	400 UJV	
Di-n-octylphthalate	 400 UJv	_400 U *	400 UJV	. 400 U	±_ 400 UJv	400 U *	400 UJv	
Benzo (b) fluoranthene	400 UJV		400 UJv		± 400 UJv	400 U *	31 J	
Benzo(k) fluoranthene	400 UJv		400 U.V		* 400 DJv	400 U *	26 J	
Benzo (a) pyrene	 400 UJv	• 400 U *	400 UJv	- 400 U	* . 400 UJV	400 U *	54. J	
Indeno(1,2,3-cd)pyrene	400 UJv		400 UJV				51 J	
Dibenz (a, h) anthracene	400 MJv		400 UJv		-		26 J	
Benzo(g,h,i)perylene	 400 UJv	r 400 U *	40 0 UJ∨	400 U	≁400_ Ŭ ⊽v	400 Q +	190 J	
Sample wt.(g):.	30	30	. 30	30	30	30	30	== '-
%Moisture:	18	18 .	18	1,8	18	18	18	
Dilution Factor:	1	1	1	_ <u>1</u>	_ 1	_ 1	1	· =
Level:	FOM	LCW	LOW	LOW	rom	LOW	LOW	
Deves.					=		- ··	
Number of TIC's:	25	17	27	- 19	31	- 26	26	
ŀ	1							_

For the results listed in the Data Summary Table. ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

Note:

CRGANIC DATA SUMMARY

Case No.: 25159 __

SDG: FFG02

_ Revīewer: M. Missler

Laboratory: AATS

Matrix: SOIL

Units:

ug/Kg

SEMIVOLATILES	FLAG_	FLAG	FLAG	FT.AG	_FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G23RE			,			
Phenol	100 77 -						
bis (2-Chloroethyl) ether	400 U *						-5
2-Chlorophenol	400 U *					-	
	1						
1,3-Dichlorobenzene	400 U *						-
1,4-Dichlorobenzene	+ U 00 ₽				-		
1.2-Dichlorobenzene	400 U *			•			
2-Methylphenol	400 U *						
2,2'-Oxybis(1-chloropropane)				=	-		
4-Methylphenol	400 U *						
	1						
N-Nitroso-di-n-propylamine	400 U *						
Hexachloroethane	400 0 *	•					
Nitrobenzene	400 U *						
Isophorone	1 400 U + -			-			
2-Nitrophenol	- 400 U *				= _	-	
2,4-Dimethylphenol	400 U *				-	-	
	!						-
bis (2-Chloroethoxy) methane	400 U *					-	
2,4-Dichlorophenol 1,2,4-Trichloropenzene	400 U * .	•		-		-	
1,2,4-111CHIOTOBENZEHE	1 4000 -						-
Naphthalene	400 U =						
4-Chloroaniline	1 400 U *		-	=		-	
Hexachlorobutadiene	400 U *						-
A Chloma 7 makhalakaral							
4-Chloro-3-methylphenol 2-Methylnaphthalene	400 U *				=		
Hexachlorocyclopentadiene	400 U *			-			
	1					-	
2,4,6-Trichlorophenol	400 U *						
2.4,5-Trichlorophenol &	1000 U *						-
2-Chloronaphthalene	400 U *						
2-Nitroaniline	1 1000 U *	-		-		_	
Dimethylphthalate	400 U *			-			
Acenaphthylene	+ U 004						
	!						
2,6-Dinitrotoluene	400 U *						
3-Nitroaniline Acenaphthene	1000 U *			-			
Acenaphichene	400 U *						
2.4-Dinitrophenol	1000 U *						
4-Nitrophenol	1000 U *						
Dibenzofuran	400 U *						
2 A-Diminuanal	1 400 77 4		•				
2,4-Dinitrotoluene Diethylphthalate	400 U +						
4-Chlorophenyl-phenylether	400 U *	-		-		-	
·	1				•		
Fluorene	400 U *						
4-Nitroaniline	1000.U *				-		
4,6-Dinitro-2-methylphenol	1000 0 *						
N-Nitrosodiphenylamine	400 U *						
4-Bromophenyl-phenylether	400 U *				-		
Hexachlorobenzene	400 U *			-			
	ĺ						
Pentachlorophenol	1000 U *						-
Phenanchrene	35 *					-	
Anthracene	400 U *			=		-	

ORGANIC DATA SUMMARY

Case No.: 25159 SDG: FFG02 Reviewer: M. Missler

Laboratory: AATS Matrix: SOIL Units: ug/Kg ______

SEMIVOLATILES	[F	LAG	FLAG	FLAG	FLAG	FLAG	FLAG	FLAG
EPA SAMPLE NUMBER:	 FF-G23RE							-
Carbazole	1 400 U	•						-
Di-n-butylphthalace		. *	-	-				
Fluoranthene	23	*		÷				
Pyrene	90	*		=		5-		
Butylbenzylphthalate	81	*					-	=
3,3'-Dichlorobenzidine] 400 U	•	-				-	• -
Benzo (a) anthracene	400 U	•				-		
Chrysene	77	*						
bis(2-Ethylhexyl)phthalace	79	*	-	-	-	-		· · · · · · · · · · · · · · · · · · ·
Di-n-octylphthalate	400 U	•						
Benzo(b) fluoranthene	35	·• · ·				=		+
Benzo(k) fluoranthene	[41	*				-		
Benzo (a) pyrene	. 60	•						·
Indeno(1,2,3-cd)pyrene	1 29	•						
Dibenz (a,h) anthracene	: 400 U	•					a 1 .	
Benzo (g, h, i) perylene	110	*						7 -
Sample wt (g):	! ! 30 	-	-			· : .		
%Moisture:	18							=
Dilution Factor:	 							-
Level:	LOW					-		
Number of TIC's:	35			-				

For the results listed in the Data Summary Table, ESAT has replaced the laboratory assigned flags with ESAT Organic Data Qualifiers. The ESAT flags indicate the technical usability of the reported results.

Note:

Case No.: 25159

-- SDG:

FFG02

Reviewer:

M. Missler

Laboratory: AATS

Matrix:

SOIL

Units:

ug/Kg

PESTICIDES/PCBs	I	FLAG	FLAG		FLAG		FLAG		FLAG		FLAG		FLAG
									_: <u></u> _				_r Ling
EPA SAMPLE NUMBER:	FF-G02	FF-G03	-	FF-G04		FF-G05		FF-G06		FF-G07	•	FF-G08	
alpha-BHC	2.1	ປ 2.0	U	2.2	U	2.1	Ū.	2.2	ប	2.3	U	_ 2.2	ט
beta-BHC	2.1	J 2.0	ប	2.2	U	2.1	Ū	2.2	U	2.3	U	2.2	σ
delta-BHC	2.1	υ 2.0	ū	2.2	Ū	2.1	U	2.2	v	2.3	ນ	2.2	Ü
gamma-BHC (lindane)	2.1	ʊ 2.0	ט	2.2	υ	2.1	υ	2.2	ט	2.3	Ū	2.2	σ
Heptachlor	2.1	U 2.0	U	2.2	U	2.1	U	2,2	Ŭ.	2.3	U	2.2	U
Aldrin	2.1	ປັ 2.0	σ	2.2	Ü	2.1	U	2.2	U	2.3	ט	2.2	U
Heptachlor epoxide	2.1	U 2.0	Ū	2.2	U	2.1	σ	2.2	Ū	2.3	U	2.2	σ
Endosulfan I	2.1	U 2.0	U	2.2	O	2.1	σ	2.2	U	2.3	U	2.2	ט
Dieldrin	4.0	σ 3.9	ប	4.2	U	4.1	U	4.2	U	4.4	σ	4.3	U
4,4'-DDE	4.0	U 3.9	σ.	4.2	υ	4.1	ŭ	4.2	U	4.4	ני	4.3	U
Endrin	4.0	U 3.9	U	4.2	ซ	4.1	Ü	4.2	ט	4.4	U	4.3	U
Endosulfan II	4.0 	U 3.9	U.	4.2	σ	4.1	ט	4.2	U	4.4	U	4.3	U
4,4'-DDD	4.0	J 3.9.	Ū	4.2	υ	4.1	บ	4.2	U	4.4	U	4.3	σ
Endosulfan sulfate	4.0	ΰ 3.9	U	4.2	U	4.1	ט	4.2	IJ	4.4	U	4.3	บ
4,4'-DDT	4.0	T 3.9	ט	4.2	U	4.1	บ	4.2	ט	4.4	ប	4.3	σ
Methoxychlor	21	ັບ 20	σ	22	ប	21	บ	22	σ	23	U	22	Ū
Endrin ketone	4.0	Ŭ 3.9	υ.	4.2	U	4.1	σ	4.2	U	4.4	U	4.3	Ū
Endrin aldehyde	4.0	U 3.9	Ū	4.2	Ū	4.1	U	4.2	υ	4.4	U	4.3	U
alpha-Chlordane	2.1	σ 2.0	υ	2.2	ט	2.1	U	2.2	U	2.3	U	2.2	tŗ
gamma-Chlordane	2.1	U 2.0	U	2.2	ប	2.1	U	2.2	U	2.3	Ŭ	2.2	ប
Toxaphene	210	ប 200	U	220	U	210	U	220	ប	230	ū	220	U
Aroclor-1016	40	T 39	Ü	42	Ū	41	U	42	U	44	U	43	U
Aroclor-1221	82		-	85	_	83	_	86	-	89	_	87	_
Aroclor-1232	40	Ū 39	ប	42	U	41	U	42	ט	44	U	43	U
Aroclor-1242	40	•	-	42		41	U .	42		44	U	43	U
Aroclor-1248	40	T 39	U	42		41	U	42	U	44	υ	43	U
Aroclor-1254	40	U 39	U	42	Ū	41	ប	42	U	44	ប	43	ប
Aroclor-1260	40 1	T 39	ט	42	ט	41	U	42	Ŭ	44	σ	43	U
Sample wc (g):	30	30		30	=	30		30		30		. 30	
Moisture:	18	16		21		19		22	-	25		23	
Dilution Factor:	1	1		.1		1		1	-	1		1	

CRGANIC DATA SUMMARY

Case No.: 25159

SDG:

FFG02

Reviewer:

M. Missler

Laboratory: AATS

Matrix:

SOIL

Units:

ug/Kg

PESTICIDES/PCBs	FLAG	FLAG	FLAG	FLAG_	FLAG	FLAG	FLAG	
EPA SAMPLE NUMBER:	FF-G09	FF-GlO	FF-G11	FF-G12	FF-G13	FF-G14	FF-G15	<u></u>
alpha-BHC	 2.4 ប	2.1 U	2.1 U	_ 2.1 U _	2.0.0	2.1 U	2.0 0	_
beta-BHC	2.4 U	2.1 U	2.1 υ_	2.1_0	2.0 σ	2.1 U	2.0 U	_
delta-BHC	2.4 U	2.1 σ	2.1 U	2.1 U	_ 2ຼ_0 ປ	, 2.1 U	2.0 U	ē
gamma-BHC (lindane)	2.4 U	2.1 U	2.1 U	2.1 U	2.0 ្ប្	2.1 U	2.0 U	
Heptachlor	2.4 U	2.1 U	2.1 U	2.1 U	2.0 0	_ 2.5	2.0 σ	
Aldrin	2.4 U	2.1 U	2.1 0	_ 2.1, U	2.០ ប	2.1 U	2-0 Ŭ	7.5
Heptachlor epoxide	2.4 U	2°.1 U	2.1 0	_ 2.1 U	2.0 T	2.1 0	2,0 0	- #
Endosulfan I	2-4 U	2.1 U	2.1 U	2.1 U	2.0 U	2.1 0	2.0_U	*
Dieldrin	4.6 U	4.0 U	4.1 U	4.1 U	3.8 ਧੁ	4.0 ℧	3.8 U	
4,4'-DDE	4.6 U	4.0.U	4.1 U	4.1 Ų	3.8 U	4.0 U	3.8 U	
Endria	4.6 U	. 4.0 U	4.1 U	4.1 U	3.8_℧	4.0 U	7.5 J	
Endosulfan II	4.6 U	4.0 U	4.1 U	4.1 _. U	3.8 T	. 4.0 U	7.9	-
4.4'-DDD	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	3.8 0	
Endosulfan sulfate	4.6 U	4.0 U	4.1 U	4.1 U	3.8 U	4.0 U	10 UJ	
4,4'-DDT	4.6 ਹ	4.0 Ü	4.1 U	4.1 U	3.8 U _	_4.0 U	3.8 U	-
Methoxychlor	24 U	21 U	21 U	21 U	20 U	_ 21 Ŭ	20 U	
Endrîn ketone	4.6 U	4.0 Ŭ	4.1 U	4.1 U	3.8 U	4.0 U	14 J	
Endrin aldehyde	4.6 U	4.0 U	4.1 U	4.7 U	<u>3.8 Ų</u>	4.0 U	3.8 0	
alpha-Chlordane	2.4 Ü	2.1 Ū	2.1 0	2.1 U	2.0 U	2.1 U	3,6 J	
gamma-Chlordane	2.4 ℧	2.1 U	2.1 U	2.1 U	ą.0 σ	2.1 U	5.7	
Toxaphene	240 U	210 U	210 U	210 U _	. <u>20</u> 0 U	210 U	200 U	
Aroclor-1016	46 U	_40 U	41 U	41 U	38 0	40 U	. 38 U	
Aroclor-1221	94 U	82 U	83 U	84 U	78 U	82 U	77 U	y
Aroclor-1232	46 U	40 U	41 U _	41 U	38 U	. 40 U	38 U	
Aroclor-1242	46 U	40 U	41 U	.41 U	. 38 Ω	40 U	. 38 U	·
Aroclor-1248	46 U	40 U	41 U	41 U	,38 U	40 U	38 U	-
Aroclor-1254	46 U	40 U	41 U	41 U	38 U	, 40 U	38 U	
Aroclor-1260	46 U	40 U	41 U	41 U	38 U	40 U	38 U	
Sample wt (g):	30	30	30	30 .	,30 <u>, </u>	- 30	30	-
%Moisture:	29	18	19	20 .	14	18	13	
Dilution Factor:	1	1	1	1	1.	, 1	1	

Case No.: 25159

SDG:

FFG02

Reviewer:

M. Missler

Laboratory: AATS

Matrix:

SOIL

Units:

ug/Kg

PESTICIDES/PCBs	FLAG_	FLAG	FLAG	FLAG	FLAG_	FLAG	FLAG
EPA SAMPLE NUMBER:	FF-G16	FF-G17	FF-G18	FF-G21	FF-G22	FF-G23	
į					"	2.1.77	
alpha-BHC	2.2 U	2.1 0	2.1.0	2.1 ប	2.1 U_	2.1 U	
beta-BHC	2.2 0	2.1 U	2.1 U	2.1 0	2.1 U	2.1 U	
delta-BHC	2. 2 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 0	
gamma-BHC (lindane)	2.2 U	2.1 U	2.1 U	2.1 U	, 2,1 U	2.1 U	
Heptachlor	2.2 ΰ	2.1 U	2.1 U	2.1 U.	2.1_U .	2.1 U	-
Aldrin	2.2 U	2.1 U	2.1 U	2.1 0	2.1 U	2.1 U	
Heptachlor epoxide	2.2 ປ	2.1	2.9	2.1 U	2.1.0	2.1 U	
Endosulfan I	2.2 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 0	
Dieldrin	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0.℧	
4,4'-DDE	4.3 U	. 4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	
Endrin	4.3 U	4.0 U	4.0 U	4.0 U	4.0 T	4.0 U	
Endosulfan II	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	-
4,4'-DDD	4.3 U	4.0 U	_ 4.0 U	4.0 U	4.0 ปี	4.0 U	
Endosulfan sulfate	4.3 U	4.0 U	4.0 U	4.0 U	4.0 U	5.6 UJ	
4,4'-DDT	4.3 U	4.0 U	4.0 U	4.0 U	4.0 Ū	4.0 U	·
Methoxychlor	22 U	21 U	21 U	21. U	21 U	21 U	
Endrin ketone	4.3 U	4.0 U	4.0 U	4.0 U	4.0 ਹ	. 4.0 U	-
Endrin aldehyde	4.3 U	4.0 U	4.0 U	4.0 U	4.0 Ŭ	4.0 U	
alpha-Chlordane	2.2 U	2.2 J	3.6 J	2.1 U	2.1 U	2.1 U	
gamma-Chlordane	2.2 U	2.8 UJ	5.9 3	2.1 U	2.1 U	2.1 U	-
Toxaphene	220 U	210 U	210 U	210 U	210 U	210 U	
Aroclor-1016	43 U	40 T	40 U	40 U	40 U	40 U	
Aroclor-1221	88 U	82 U	82 U	82 U	82 U	82 U	
Aroclor-1232	43 U	40 U	40 U	40 U	40 U	40 U	
Aroclor-1242	43 U	40 U	40 Ü	40 U	40 U	40 T	
Aroclor-1242	43 U	40 U	40 U -	40 0	40 U	40 U	
Aroclor-1254	43 U	40 U	40 U	40 U	40 U	40 U	
	47.67	4.0 -		40 U	40 U	40 U	
Aroclor-1260	43 U	. 40 U	40 U	40 0	40 0	40 0	
 Sample wt (g):	. 30	30	30	30	30	30	
%Moisture:	24	18	18	18	18	18	
Dilution Factor:	1	. 1	1	1	. 1	1	

INORGANIC/ORGANIC COMPLETE SDG FILE (CSF) INVENTORY CHECKLIST

Case No.	25159 SDG No. FFG02 SDG Nos. To Follo	w SAS No.	Date I	Rec <u>1</u>	<u>2/27/96</u>
EPA La	ub ID: AATS	ORIGINALS	YES	NO	N/A
Lab Lo	cation: Broken Arrow. OK 74012	CUSTODY SEALS			T
Region	6 Audit No.: 25159/FFG02	1. Present on package?	_ X	1	
Re_Sub	mitted CSF? Yes No X	2. Intact upon receipt?	Х		
Box No	(s): <u>1</u>	FORM DC-2			
COMM	ENTS:	3. Numbering scheme accurate?		х	
•		4. Are enclosed documents listed?	X		1
3	The reviewer clarified the numbering scheme as follows: SDG narrative was pages 1-35B;	5. Are listed documents enclosed?	X		T
	SDG cover sheet/TR were pages 35C-38-	FORM DC-1			
	Forms VIII VOA were pages 362-367; and VOA standards data were pages 178-361.	6. Present?	x		
13	No airbills were available as the samples were delivered in	7. Complete?	Х		T
	person.	8. Accurate?	Х		1
	•	CHAIN-OF-CUSTODY RECORD(s)			
		9. Signed?	x		
		10. Dated?	х		
		TRAFFIC REPORT(s) PACKING LIST(s)			
		11. Signed?	x		
		12. Dated?	X		1
		AIRBILLS/AIRBILL STICKER	+		
		13. Present?	1		x
		14. Signed?			x
		15. Dated?			х
		SAMPLE TAGS	1		1
		16. Does DC-1 list tags as being included?	x		
		17. Present?	X		
		OTHER DOCUMENTS			1
		18. Complete?	x		
		19. Legible?	х		
		20. Original?		x	
Over for	additional comments.	20a.If "NO", does the copy indicate where original documents are located?	х		
Audited b	70.0 70 70 70 70 70 70 70 70 70 70 70 70 70	Maria Missler / ESAT Data Reviewer	Date Date		7 _
Audited b			Date		
	Signature	Printed Name/Title			
	TO RE COM	PLETED BY CEAT	-		
Date i		Date Entered: Date Reviewed:	.		
	Entered by:				
		<u> </u>			
	Reviewed by:			-	
	Signature	Printed Name/Title			

In Reference to Case No(s): 25159 SDG: FFG02 (0-1780)

Contract Laboratory Program REGIONAL/LABORATORY COMMUNICATION SYSTEM FAX Record Log

	Date of Laborato Lab Cont	ory Name:	January 10, AATS Harry Bo		
	Region: Regional	l Contact:	6 Maria Missler	- ESAT	
	FAX init	ciated by:	Laboratory	XRegion	1
In :	reference	to data for	the following fra	ctions:	
	BNA	Pest/PCB			

Summary of Questions/Issues:

A. BNA

- 1. Sample FF-G11, Form I SV-TIC: The TIC's at 22.326 and 22.595 min. were assigned the same CAS number and compound name. Please revise and resubmit this form.
- 2. Sample FF-G17RE, Form I SV-TIC: The TIC's at 12.764 and 13.089 min. were assigned the same CAS number and compound name. Please revise and resubmit this form.
- 3. Sample FF-G16: On the quantitation report, the peak identified as benzo(a)anthracene better matches the retention time identification criteria for chrysene. Please correct and resubmit the quantitation and results reports.
- 4. The following peaks appear to meet the TIC intensity criteria but were not reported. Please revise Forms I SV-TIC to include these peaks or:explain:

Sample	Approximate peak RT (min)
FF-G03	11.4, 12.0
FF-G04	4.95, 11.7, 12.2
FF-G07	4.4
FF-G10	7.6

5. Form V SV, page 464: According to the analysis log (page 2682), the sample analyzed on 12/12/96 at 0029 was identified as "FF-G01", not FF-G06 as reported on this form. Please clarify this discrepancy.

FAX COMMUNICATION LOG

Continuation Page 2
Laboratory/Contact AATS / Harry Borg
In Reference To Case No. 25159 SDG: FFG02

B. Pest/PCB

- 1. Forms VI PEST-2, pages 2327, 2328, 2329, and 2330: The reviewer was unable to reproduce the calibration factors reported for the two surrogates based on the raw data (pages 2396-2409 and 2449-2462). Please correct and resubmit these forms to match the raw data or demonstrate your calculations.
- 2. Method blank PBLKSC, page 2490: According to the SOW (OLM03.0, D-73/PEST, 12.1.2.4) the method blank acceptance criteria apply independently to each analytical column. The integration report (page 2490) shows the presence of endosulfan sulfate on column DB-17 above the CRQL. Please comment on this non-compliance.

NOTE: Any laboratory resubmission should be submitted either as an addendum to the original CSF with a revised Form DC-2 or submitted as a new CSF with a new Form DC-2 (OLM03.0, p. B-29), except those containing only replacement pages. Custody seals are required for all CSF resubmission shipments.

Please respond to the above items. Region 6 resubmissions may be included with CCS response or sent separately within 7 days to:

Mr. Mahmoud EI-Feky
U.S. EPA Region 6 Laboratory
10625 Fallstone Road
Houston, TX 77099

If you have any questions, please contact me at (713) 988-2995.

Maria Kliss/er

Signature

January 10, 1997

Date

Distribution: (1) Lab Copy (2) Region Copy

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

FFG16

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159 SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.09

Sample wt/vol:

30.0 (g/mL) G

Lab File ID:

P10137.D

Level:

(low/med)

Date Received: 11/19/96/10/4/94

decanted: (Y/N) N

Date Extracted:11/19/96

% Moisture: 24

Concentrated Extract Volume: 500(uL)

LOW

Date Analyzed: 12/02/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

рH: 9.4

Number TICs found: 35

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT.	EST. CONC.	Q
1. 2. 3. 4. 5.	UNKNOWN UNKNOWN UNKNOWN UNKNOWN UNKNOWN	21.700 22.117 22.425 22.604 22.861	670 480 220 380 240	J J J J
7. 8. 9. 10. 11. 12. 13.				
15. 16. 17. 18.				
21. 22. 23. 24.				
26. 27. 28. 29. 30.				

Contract: 68-D5-0022

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

FFG16RE

EPA SAMPLE NO.

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.09RA

ab Name: SWL-TULSA

Sample wt/vol:

30.0 (g/mL) G

P10196.D N Lab File ID:

Level: (low/med) LOW

Date Received: 11/19/96 13/04/96

% Moisture: 24

decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/05/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.4

CAS NO.	COMPOUND	CONCENTRATIO (ug/L or ūg)		Q
108-95-2 111-44-4 95-57-8 541-73-1 106-46-7 95-50-1 95-48-7 108-60-1 106-44-5 621-64-7 98-95-3 78-59-1 88-75-5 105-67-9 111-91-1 120-83-2 120-82-1 91-20-3 106-47-8 91-20-3 106-47-8 91-57-6 77-47-4 88-06-2 95-95-4 91-58-7 131-11-3 208-96-8	Phenolbis(2-Chloroet2-Chlorophenol1,3-Dichlorobe1,4-Dichlorobe1,2-Dichlorobe2,2'-oxybis(14-MethylphenolNitroso-di-nHexachloroethaNitrobenzene2,4-Dichloroph2,4-Dichloroph2,4-Dichloroph1,2,4-TrichlorNaphthalene4-ChloroanilinHexachloroouta4-Chloro-3-Met2-Methylphorobuta4-Chloro-3-Met2-MethylnaphthHexachlorocycl2,4,6-Trichlor2,4,5-Trichlor2-Chloronaphth2-NitroanilineDimethylphthalAcenaphthylene	hyl)Ethernzene	430 430 430 430 430 430 57 430 100 430 430 430 430 430 430 430 430 430 4	ממטמטמטמטמטמטמטמטמטרטטטטטט
99-09-2	2,6-Dinitrotol	uene	430 1100 430	ט ט

FORM I SV-1

EPA SAMPLE NO.

FFG16RE

Tab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27670.09RA

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10196.D B

Level: (low/med) LOW Date Received: 11/19/96

% Moisture: 24 decanted: (Y/N) N Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/05/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.4

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

FFG16RE

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.09RA

Sample wt/vol: 30.0 (g/mL) G

Lab File ID:

P10196.D

Level: (low/med) LOW

Date Received: 11/19/96 13/24/96

% Moisture: 24 decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/05/96

Injection Volume: 7.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.4

Number TICs found: 35

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN ORGANIC ACID	3.104	1500	J
2.	UNKNOWN	3.154	130	J
3.	UNKNOWN	3.478	530	JB
4.	UNKNOWN	3.666	360	JВ
^l 5.	UNKNOWN	3.803	550	J
6. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.981	2200	NJAB
7.	UNKNOWN	4.060	380	JB
8.	UNKNOWN	4.168	110	J
9.	UNKNOWN	4.247	210	J
10.	UNKNOWN	4.709	270	J
11.	UNKNOWN	4.926	170	ა ა ა ა ა ა
12.	(5H)-Furanone, -dimethyl-	5.143	130	J
13.	-Hexenone, -methyl-	5.261	140	J
14.	UNKNOWN	7.180	180	J
15.	Phenol, -ethyl-	7.732	100	J
16.	UNKNOWN	14.630	260	J
17.	UNKNOWN	15.273	320	J
18.	UNKNOWN	15.590	300	
19.	UNKNOWN	15.977	240	JB
20.	Phenol, '-(1-methylethyliden		500	J
21.	UNKNOWN	16.821	650	J
22.	UNKNOWN	17.288	550	ᆝ
23.	UNKNOWN	18.251	510	7
24.	UNKNOWN	19.720	290	· 및
25.	UNKNOWN	19.909	250	ᆛ
26.	UNKNOWN	20.087	760	ᅵ 빌
27.	UNKNOWN	20.167	280	
28.	UNKNOWN	20.296	450	1
29.	UNKNOWN	20.603	360	1
30.	UNKNOWN	20.951	460	
l	.1			li

Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27683.07

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10294.D

Level: (low/med) LOW Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/09/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

ab Name: SWL-TULSA

CONCENTRATION UNITS: CAS NO. COMPOUND (ug/L or ug/Kg) UG/KG 108-95-2----Phenol 400.1 111-44-4----bis(2-Chloroethyl)Ether_ 400 U 95-57-8----2-Chlorophenol 400 U 541-73-1-----1,3-Dichlorobenzene 400 U 106-46-7----1,4-Dichlorobenzene U 400 95-50-1----1,2-Dichlorobenzene U 400 95-48-7----2-Methylphenol 400 U 108-60-1----2,2'-oxybis(1-Chloropropane) 400 U 106-44-5----4-Methylphenol U 400 621-64-7----N-Nitroso-di-n-propylamine_ U 400 67-72-1-----Hexachloroethane 400 U 98-95-3----Nitrobenzene 400 U 78-59-1----Isophorone 400 U 88-75-5----2-Nitrophenol 400 U 105-67-9-----2,4-Dimethylphenol 111-91-1-----bis(2-Chloroethoxy)methane 120-83-2-----2,4-Dichlorophenol 120-82-1----1,2,4-Trichlorobenzene 400 U 400 U 400 U 400 U 91-20-3----Naphthalene 400 U 106-47-8----4-Chloroaniline 400 U 87-68-3-----Hexachlorobutadiene 400 U 59-50-7----4-Chloro-3-Methylphenol_ 400 U 91-57-6----2-Methylnaphthalene 400 U 77-47-4-----Hexachlorocyclopentadiene 88-06-2----2,4,6-Trichlorophenol 400 U 400 U 95-95-4----2,4,5-Trichlorophenol 1000 U U 91-58-7----2-Chloronaphthalene 400 88-74-4----2-Nitroaniline U 1000 U 131-11-3-----Dimethylphthalate 400 208-96-8-----Acenaphthylene U 400 606-20-2----2,6-Dinitrotoluene_ 400 U 99-09-2----3-Nitroaniline 1000 U 400 U 83-32-9------Acenaphthene

FORM I SV-1

EPA SAMPLE NO.

FFG17

ab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27683.07

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10294.D

Level: (low/med) LOW Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/09/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

FFG17

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27683.07

Sample wt/vol:

Lab File ID:

P10294.D

30.0 (q/mL) G

Date Received: 11/19/96

Level: (low/med)

LOW

% Moisture: 18

decanted: (Y/N) N

Date Extracted: 11/20/96

Concentrated Extract Volume:

Injection Volume: 2.0(uL)

Date Analyzed: 12/09/96

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 6.4

500(uL)

Number TICs found: 29

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	† · · · · · · · · · · · · · · · · · · ·			
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN ALKENE	3.351	100	J
2.	UNKNOWN	3.657	160	J
3. 123-42-2	2-Pentanone, 4-hydroxy-4-met		910	NJAB
4.	UNKNOWN	3.913	120	J
5.	UNKNOWN	3.943	150	J
6.	UNKNOWN	3.973		J
7.	UNKNOWN	4.535	110	J
8.	UNKNOWN	4.742	680	J
9.	UNKNOWN	4.959	250	JB
10.	UNKNOWN	5.078	130	JВ
11.	UNKNOWN	6.114	160	J
12.	UNKNOWN	6.183	410	J
13.	UNKNOWN	7.583	120	J
14. 0-00-0	Linalyl propanoate	7.850	86	NJ
15. 13049-35-9	1,1'-Biphenyl, 2,2'-diethyl-	12.810	410	ŊJ
16.	UNKNOWN PAH	13.136	220	J
17.	UNKNOWN ORGANIC ACID	14.391	150	J
18.	UNKNOWN ORGANIC ACID	14.460	640	J
19. 57-10-3	Hexadecanoic acid	14.520	440	IJ
20. 112-80-1		15.756	510	ŊJ
21. 57-11-4	Octadecanoic acid	15.845	92	ŊJ
22.	UNKNOWN ORGANIC ACID	17.826	440	J
23.	-Tridecatrienenitrile, -trim		520	
24.	UNKNOWN	21.331	370	J
25.	UNKNOWN	21.967	760	J
26.	-Naphthoquinone, -ethyldih	22.066	650	<u>J</u>
27.	UNKNOWN PAH	22.096	880	J
28. 83-47-6	.gammaSitosterol	22.255	1100	ŊJ
29.	UNKNOWN	22.742	380	J
30				
				li

FFG17RE

P10327.D

Lab File ID:

ab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27683.07RA

Level: (low/med) LOW Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/10/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

Sample wt/vol: 30.0 (g/mL) G

CAS NO. COMPOUND (ug/L or ug/Kg) UG/KG Q

CAB NO.	COMPOUND (Hg/L OI Hg/	rkg) og/kg	<u>~</u>
108-95-2	Phenol	400	U
	bis(2-Chloroethyl)Ether	400	ប
95-57-8	2-Chlorophenol	400	ប
541-73-1	1,3-Dichlorobenzene	400	ប
106-46-7	1,4-Dichlorobenzene	400	ប
95-50-1	1,2-Dichlorobenzene	400	ប
95-48-7	2-Methylphenol	400	ប
108-60-1	2,2'-oxybis(1-Chloropropane)	400	ប
106-44-5	4-Methylphenol	400	ប
621-64-7	N-Nitroso-di-n-propylamine	400	ប
67-72-1	Hexachloroethane	400	U
98-95-3	Nitrobenzene	400	ប
78-59-1	Isophorone	400	U
88-75-5	2-Nitrophenol	400	U
105-67-9	2.4-Dimethylphenol	400	Ū
111-91-1	bis(2-Chloroethoxy)methane	400	ប
120-83-2	2,4-Dichlorophenol	400	บ
120-82-1	1,2,4-Trichlorobenzene	400	U
91-20-3	Naphthalene	400	ប
106-47-8	4-Chloroaniline	400	Ū
87-68-3	Hexachlorobutadiene	400	U
59-50-7	4-Chloro-3-Methylphenol	400	ប
91-57-6	2-Methylnaphthalene	-400	ט
77-47-4	Hexachlorocyclopentadiene	400	U
88-06-2	2,4,6-Trichlorophenol	400	บ
95-95-4	2,4,5-Trichlorophenol	1000	U
91-58-7	2-Chloronaphthalene	400	ប
88-74-4	2-Nitroaniline	1000	Ū
131-11-3	Dimethylphthalate	400	บ
208-96-8	Acenaphthylene	400	ប
606-20-2	2,6-Dinitrotoluene	400	υ
99-09-2	3-Nitroaniline	1000	ប
83-32-9	Acenaphthene	400	U
	-		l

FORM I SV-1

FFG17RE

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27683.07RA

Sample wt/vol: 30.0 (q/mL) G Lab File ID: P10327.D

Level: (low/med) LOW Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/10/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

CONCENTRATION UNITS: CAS NO. COMPOUND (ug/L or ug/Kg) UG/KG Q 1000 U 51-28-5----2,4-Dinitrophenol 100-02-7----4-Nitrophenol 1000 U 132-64-9-----Dibenzofuran U 400 U 121-14-2----2,4-Dinitrotoluene 400 84-66-2----Diethylphthalate 400 U 7005-72-3----4-Chlorophenyl-phenylether U 400 86-73-7-----Fluorene 400 U 100-01-6----4-Nitroaniline U 1000 534-52-1-----4,6-Dinitro-2-methylphenol U 1000 86-30-6----N-Nitrosodiphenylamine (1) U 400 101-55-3----4-Bromophenyl-phenylether 400 U U 118-74-1----Hexachlorobenzene 400 87-86-5----Pentachlorophenol U 1.000 85-01-8-----Phenanthrene Ū 400 120-12-7-----Anthracene U 400 Ū 86-74-8-----Carbazole 400 Ū 84-74-2----Di-n-butylphthalate 400 Ū 206-44-0----Fluoranthene 400 Ū 129-00-0----Pyrene 400 J 85-68-7-----Butylbenzylphthalate 56 91-94-1----3,3'-Dichlorobenzidine_ 400 Ŭ 56-55-3----Benzo(a)anthracene 400 218-01-9-----Chrysene 40 117-81-7----bis(2-Ethylhexyl)phthalate_ 62 JB 117-84-0-----Di-n-octylphthalate 400 U U 205-99-2----Benzo(b)fluoranthene 400 U 207-08-9----Benzo(k)fluoranthene 400 50-32-8-----Benzo(a)pyrene U 400 193-39-5----Indeno(1,2,3-cd)pyrene U 400 53-70-3-----Dibenz(a,h)anthracene 400 U 191-24-2----Benzo(g,h,i)perylene 1 400

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

ab Name: SWL-TULSA Contract: 68-D5-0022 FFG17RE

Lab Code: AATS Case No.: 25159 SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27683.07RA

Sample wt/vol:

30.0 (g/mL) G

Lab File ID:

P10327.D

Level:

(low/med) LOW Date Received: 11/19/96

decanted: (Y/N) N

500(uL)

Date Extracted: 11/20/96

% Moisture: 18

Concentrated Extract Volume:

Date Analyzed: 12/10/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup:

(Y/N) Y pH: 6.4

Number TICs found: 22

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER COMPOUND NAME	RT	EST. CONC.	Q
1. UNKNOWN 2. 123-42-2	3.627 3.785 3.873 4.505 4.712 4.929 5.047 6.083 6.142 7.541 12.764	94 830 110 93 680 220 150 140 280 120 400 230 130 520 370 430 750 410 670 720 1000 800	JAB JJAB JJ JB JB JJ JJ JJ JJ JJ JJ JJ JJ JJ JJ

1B SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

ab Name: SWL-TULSA Contract: 68-D5-0022 FFG18

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27683.08

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10295.D

Level: (low/med) LOW Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/09/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

CONCENTRATION UNITS: CAS NO. COMPOUND (ug/L or ug/Kg) UG/KG Q 108-95-2----Phenol 400 U 111-44-4----bis(2-Chloroethyl)Ether_ 400 U 95-57-8-----2-Chlorophenol 400 U 541-73-1----1,3-Dichlorobenzene 400 U 106-46-7-----1,4-Dichlorobenzene 95-50-1-----1,2-Dichlorobenzene 400 U U 400 95-48-7----2-Methylphenol 400 U 108-60-1----2,2'-oxybis(1-Chloropropane) U 400 106-44-5----4-Methylphenol 400 U U 621-64-7----N-Nitroso-di-n-propylamine 400 67-72-1----Hexachloroethane 400 U 98-95-3----Nitrobenzene 400 Ų U 78-59-1-----Isophorone 400 U 88-75-5----2-Nitrophenol 400 U 105-67-9----2,4-Dimethylphenol 400 111-91-1----bis(2-Chloroethoxy)methane 400 U 120-83-2----2,4-Dichlorophenol 400 U 120-82-1----1,2,4-Trichlorobenzene 400 U 91-20-3----Naphthalene 400 U 106-47-8-----4-Chloroaniline 400 IJ 87-68-3-----Hexachlorobutadiene 400 U 59-50-7----4-Chloro-3-Methylphenol 400 U 91-57-6----2-Methylnaphthalene 400 U 400 U 77-47-4-----Hexachlorocyclopentadiene 88-06-2----2,4,6-Trichlorophenol 400 U 95-95-4----2,4,5-Trichlorophenol U 1000 91-58-7----2-Chloronaphthalene U 400 1000 U 88-74-4----2-Nitroaniline 131-11-3-----Dimethylphthalate 400 U U 208-96-8-----Acenaphthylene 400 606-20-2----2,6-Dinitrotoluene_ U 400 99-09-2----3-Nitroaniline 1000 U 83-32-9-----Acenaphthene 400

FORM I SV-1

EPA SAMPLE NO.

FFG18

ab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27683.08

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10295.D

Level: (low/med) LOW Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/09/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/KG	
	001E 001E	(49/11 01 49/119/ 00/110	

CONCENDED ABTON INTEG.

51-28-52,4-Dinitrophenol	1000	U
100-02-74-Nitrophenol	1000	U
132-64-9Dibenzofuran	400	U
121-14-22,4-Dinitrotoluene	400	ט
84-66-2Diethylphthalate	400	U
7005-72-34-Chlorophenyl-phenylether	400	U
86-73-7Fluorene	400	σ
100-01-64-Nitroaniline	1000	σ
534-52-14,6-Dinitro-2-methylphenol	1000	Ū
86-30-6N-Nitrosodiphenylamine (1)	400	ט
101-55-34-Bromophenyl-phenylether	400	Ū
118-74-1Hexachlorobenzene	400	U
87-86-5Pentachlorophenol	1000	บ
85-01-8Phenanthrene	400	บ
120-12-7Anthracene	400	บ
86-74-8Carbazole	400	U
84-74-2Di-n-butylphthalate	400	U
206-44-0Fluoranthene	400	U
129-00-0Pyrene	√38	J
85-68-7Butylbenzylphthalate	45	J
91-94-13,3'-Dichlorobenzidine	400	ប
56-55-3Benzo(a)anthracene	400	ט
218-01-9Chrysène	1 26	J
117-81-7bis(2-Ethvlhexvl)phthalate	/80	JB
117-84-0Di-n-octvlphthalate	400	U
205-99-2Benzo(b)fluoranthene	400	ט
207-08-9Benzo(k)fluoranthene	400	ט
50-32-8Benzo(a)pyrene	400	ש
193-39-5Indeno(1,2,3-cd)pyrene	400	U
53-70-3Dibenz(a,h)anthracene	400	ט
191-24-2Benzo(g,h,i)perylene	400	U
	•	

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

FFG18

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159 SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27683.08

Sample wt/vol:

30.0 (q/mL) G

Lab File ID:

P10295.D

Level:

(low/med)

Date Received: 11/19/96

% Moisture: 18

decanted: (Y/N) N

Date Extracted: 11/20/96

Concentrated Extract Volume:

LOW

Date Analyzed: 12/09/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

рH: 6.4

500(uL)

Number TICs found: 25

ab Name: SWL-TULSA ____ Contract: 68-D5-0022 ____

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10328.D

Level: (low/med) LOW Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/10/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

CAS NO.	COMPOUND	CONCENTRATION (ug/L or ug/		Q
108-95-2 111-44-4 95-57-8 541-73-1 106-46-7 95-50-1 95-48-7 108-60-1 106-44-5 621-64-7 98-95-3 78-59-1 105-67-9 111-91-1 120-83-2 105-67-9 111-91-1 120-83-2 106-47-8 91-57-6 91-57-6 77-47-4 88-06-2		thyl)Ether		ם מם מם מם מם מם מם מם מם מם מם מם מם מם מ
91-58-7 88-74-4 131-11-3 208-96-8 606-20-2 99-09-2	2-Chloronapht2-Nitroanilin2-NitroanilinDimethylphthaAcenaphthylen3-NitroanilinAcenaphthene	halene e late luene	400 1000 400 400 400 1000 400	U U U U U

FORM I SV-1

FFG18RE

Tab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27683.08RA

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10328.D

Level: (low/med) LOW Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/10/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

CONCENTRATION UNITS:
CAS NO. COMPOUND (ug/L or ug/Kg) UG/KG Q

51-28-52,4-Dinitrophenol	1000	ប
100-02-74-Nitrophenol	1000	U
132-64-9Dibenzofuran	400	U
121-14-22,4-Dinitrotoluene	400	ប
84-66-2Diethylphthalate	400	U
7005-72-34-Chlorophenyl-phenylether_	400	ប
86-73-7Fluorene	400	ប
100-01-64-Nitroaniline	1000	ប
534-52-14,6-Dinitro-2-methylphenol	1000	ប
86-30-6N-Nitrosodiphenylamine (1)	400	ប
101-55-34-Bromophenyl-phenylether	400	U
118-74-1Hexachlorobenzene	400	U
87-86-5Pentachlorophenol	1000	U
85-01-8Phenanthrene	400	U
120-12-7Anthracene	400	σ
86-74-8Carbazole	400	Ū
84-74-2Di-n-butylphthalate	400	U
206-44-0Fluoranthene	400	U
129-00-0Pyrene	400	U
85-68-7Butylbenzylphthalate	51	J
91-94-13,3 -Dichlorobenzidine	400	U
56-55-3Benzo(a)anthracene	400	U
218-01-9Chrysèné	26	J
117-81-7bis(2-Ethylhexyl)phthalate	_/ 83	JB
117-84-0Di-n-octylphthalate	400	ប
205-99-2Benzo(b)fluoranthene	400	ប
207-08-9Benzo(k)fluoranthene	400	ប
50-32-8Benzo(a)pyrene	400	ប
193-39-5Indeno(1,2,3-cd)pyrene	400	ט
53-70-3Dibenz(a,h)anthracene	400	ប
191-24-2Benzo(g,h,i)perylene	400	ט

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLMO3.0

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

FFG18RE Contract: 68-D5-0022

ab Name: SWL-TULSA

Case No.: 25159 SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27683.08RA

Sample wt/vol:

Lab Code: AATS

30.0 (g/mL) G

Lab File ID: P10328.D

Level:

(low/med) LOW

Date Received: 11/19/96

% Moisture: 18

decanted: (Y/N) N Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/10/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

рН: б.4

Number TICs found: 17

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2 2. 3. 4. 5. 6. 7. 8. 9. 2091-29-4 10. 57-10-3 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30.	2-Pentanone, 4-hydroxy-4-met UNKNOWN UNKNOWN UNKNOWN UNKNOWN UNKNOWN UNKNOWN 9-Hexadecenoic acid Hexadecanoic acid UNKNOWN ORGANIC ACID UNKNOWN ORGANIC ACID UNKNOWN PAH UNKNOWN PAH UNKNOWN PAH UNKNOWN UNKNOWN UNKNOWN	3.784 4.711 4.928 5.047 6.082 6.142 7.541 14.350 14.429 14.489 15.712 15.801 19.566 21.908 21.997 22.026 22.214	700 520 250 160 140 210 120 130 600 460 210 750 590 930 700 590	NJAB J JB J J J J J J J J J J J J J J J J

COMPOUND

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

FFG21

Q ...

ab Name: SWL-TULSA Contract: 68-D5-0022

> SDG No.: FFG02 Case No.: 25159 SAS No.:

> > CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/KG

Matrix: (soil/water) SOIL Lab Sample ID: 27683.09

Sample wt/vol: Lab File ID: P10296.D 30.0 (g/mL) G

Level: (low/med) Date Received: 11/19/96 LOW

% Moisture: 18 decanted: (Y/N) N Date Extracted: 11/20/96

Concentrated Extract Volume: Date Analyzed: 12/10/96 500(uL)

Injection Volume: Dilution Factor: 1.0 2.0(uL)

GPC Cleanup: (Y/N) Y pH: 6.4

208-96-8-----Acenaphthylene

99-09-2----3-Nitroaniline

83-32-9-----Acenaphthene

606-20-2----2,6-Dinitrotoluene

Lab Code: AATS

CAS NO.

1		
108-95-2Phenol	400	/ 0
111-44-4bis(2-Chloroethyl)Ether	400	וֹט
95-57-82-Chlorophenol	400	וֹט
541-73-11,3-Dichlorobenzene	400	וֹט
106-46-71,4-Dichlorobenzene	400	ט
95-50-11,2-Dichlorobenzene	400	บ
95-48-72-Methylphenol	400	וט
108-60-12,2'-oxybis(1-Chloropropane)	400	וט
106-44-54-Methylphenol	400	ן ט
621-64-7N-Nitroso-di-n-propylamine	400	ט
67-72-1Hexachloroethane	400	ן ט
98-95-3Nitrobenzene	400	ซ
78-59-1Isophorone	400	ש
88-75-52-Nitrophenol	400	ש
105-67-92,4-Dimethylphenol	400	υl
111-91-1bis(2-Chloroethoxy)methane	400	ן ט
120-83-22,4-Dichlorophenol	400	U
120-82-11,2,4-Trichlorobenzene	400	U
91-20-3Naphthalene	400	ט
106-47-84-Chloroaniline	400	י די
87-68-3Hexachlorobutadiene	400	ן ט
59-50-74-Chloro-3-Methylphenol	400	ן ס
91-57-62-Methylnaphthalene	400	ן ט
77-47-4Hexachlorocyclopentadiene	400	ט
88-06-22,4,6-Trichlorophenol	400	U U
95-95-42,4,5-Trichlorophenol	1000	ן ט
91-58-72-Chloronaphthalene	400	U
88-74-42-Nitroaniline	1000	ן ט
131-11-3Dimethylphthalate	400	ן ט

U U

U

U

400

400

400

1000

FFG21 Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Lab Sample ID: 27683.09 Matrix: (soil/water) SOIL

Lab File ID: P10296.D Sample wt/vol: 30.0 (g/mL) G

Date Received: 11/19/96 Level: (low/med) LOW

% Moisture: 18 decanted: (Y/N) N Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/10/96

Dilution Factor: 1.0 Injection Volume: 2.0(uL)

GPC Cleanup: (Y/N) Y pH: 6.4

ab Name: SWL-TULSA

CAS NO.	COMPOUND	CONCENTRATION (ug/L or ug/K		Q
51-28-5 100-02-7 132-64-9 121-14-2 84-66-2 7005-72-3 86-73-7 100-01-6 534-52-1 86-30-6 101-55-3 118-74-1 87-86-5 120-12-7 86-74-8 120-12-7 84-74-2 206-44-0 129-00-0 85-68-7 91-94-1 56-55-3 218-01-9 117-81-7 117-84-0 205-99-2 207-08-9	2,4-Dinitrophe4-NitrophenolDibenzofuran2,4-DinitrotolDiethylphthala4-ChlorophenylFluorene4,6-Dinitro-2Nitrosodiphe4-BromophenylHexachlorophenylPentachlorophePentachlorophePhenanthreneCarbazoleDi-n-butylphthFluoranthenePyreneButylbenzylpht3,3'-DichlorobBenzo(a)anthraChrysenebis(2-Ethylhexbis(b)fluoraBenzo(k)fluora	(ug/L or ug/Konol	1000 1000 400 400 400 400 1000 1000 400 4	מממממממממממממממממממממממממממממממממממממממ
193-39-5 53-70-3	Benzo(a)pyrene Indeno(1,2,3-c Dibenz(a,h)ant Benzo(g,h,i)pe	d)pyrenehracene	400 400 400 400	0 0 0

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

1F. SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

FFG21

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27683.09

Sample wt/vol: 30.0 (g/mL) G Lab File ID:

P10296.D

Level: (low/med) LOW

Date Received: 11/19/96

% Moisture: 18

decanted: (Y/N) N Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/10/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

Number TICs found: 27

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER COMPOUND NAME	RT	EST. CONC.	Q
CAS NUMBER COMPOUND NAME 1. UNKNOWN 2. 123-42-2 3. UNKNOWN 4. UNKNOWN 5. UNKNOWN 6. UNKNOWN 7Hydroxyoxohexanoic acid 1 UNKNOWN 10. UNKNOWN 11. UNKNOWN 12. UNKNOWN 13Cyclohexenemethanol, UNKNOWN 14. UNKNOWN ORGANIC ACID 15. UNKNOWN ORGANIC ACID 16. 57-10-3 Hexadecanoic acid UNKNOWN ORGANIC ACID 18. 112-80-1 Oleic Acid 19. 57-11-4 Octadecanoic acid Cholesterol UNKNOWN 22. UNKNOWN 23. UNKNOWN 24. UNKNOWN 25. UNKNOWN 26. UNKNOWN 27. Androstenone, -hydroxy-,	3.657 3.815 3.913 3.943 4.535 4.604 4.742 4.959 5.078 6.104 6.183 7.583 7.849 14.399 14.478 14.528 15.734 15.764 15.853 21.332 21.828 21.977 22.066 22.096 22.652 22.871	EST. CONC. 160 860 140 150 91 88 790 320 130 120 280 160 82 200 890 600 400 410 350 330 290 420 300 450 400 330 310	JAB NJAB JBB JBC JCN JCN JCN JCN JCN JCN JCN JC

1589

Tab Name: SWL-TULSA Contract: 68-D5-0022 FFG21RE

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27683.09RA

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10329.D

Level: (low/med) LOW Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/10/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/KG Q

CAS NO.	COMPOUND (ug/L or ug	/Kg)	UG/KG	Q
108-95-2	Phonol		400	U
	bis(2-Chloroethyl)Ether	-1	400	บี
95-57-8	2-Chlorophenol	-1	400	บั
541-73-1	1,3-Dichlorobenzene	-	400	บั
106-46-7	1,4-Dichlorobenzene	-	400	บ
95-50-1	1,2-Dichlorobenzene	-[400	ซื
95-48-7	2-Methylphenol	-	400	Ū
108-60-1	2,2'-oxybis(1-Chloropropane)	-	400	Ū
106-44-5	4-Methylphenol	1	400	ប
621-64-7	N-Nitroso-di-n-propylamine	-	400	ប
67-72-1	Hexachloroethane	•	400	ט ו
98-95-3	Nitrobenzene	1	400	ט ו
78-59-1	Isophorone	-1	400	ប
88-75-5	2-Nitrophenol	-	400	U
105-67-9	2,4-Dimethylphenol	•[400	ן ט
111-91-1	bis(2-Chloroethoxy)methane_	-1	400	ט
120-83-2	2,4-Dichlorophenol	-1	400	ן די
120-82-1	1,2,4-Trichlorobenzene	1	400	U
91-20-3	Naphthalene	-1	400	ប
106-47-8	4-Chloroaniline	<u> </u>	400	ט
87-68-3	Hexachlorobutadiene	-1	400	
59-50-7	4-Chloro-3-Methylphenol	-1	400	ט
91-57-6	2-Methylnaphthalene	1	400	U
77-47-4	Hexachlorocyclopentadiene	1	400	บ
88-06-2	2,4,6-Trichlorophenol	1	400	ט
95-95-4	2,4,5-Trichlorophenol	-1	1000	
91-58-7	2-Chloronaphthalene	-	400	U
88-74-4	2-Nitroaniline	Ī	1000	ט
131-11-3	Dimethylphthalate	-1	400	ש
208-96-8	Acenaphthylene		400	U
606-20-2	2.6-Dinitrotoluene		400	ן ע
99-09-2	3-Nitroaniline		1000	U
83-32-9	Acenaphthene	-1	400	ט
		TI		l

FORM I SV-1

FFG21RE

Tab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27683.09RA

Sample wt/vol: 30.0 (q/mL) G Lab File ID: P10329.D

Level: (low/med) LOW Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N Date Extracted: 11/20/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/10/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.4

		CONCENTR	ATION U	NITS:	
CAS NO.	COMPOUND	(ug/L or	ug/Kg)	UG/KG	Q
51-28-5	2,4-Dinitroph	enol		1000	U
100-02-7	4-Nitrophenol			1000	ប
132-64-9	Dibenzofuran			400	บ
121-14-2	2,4-Dinitroto	luene		400	ַ ט
84-66-2	Diethylphthal	ate		400	ַ ט
7005-72-3	4-Chloropheny	1-phenylethe	<u>r</u>	400	บ
86-73-7	Fluorene			400	ש
100-01-6	4-Nitroa nilin	е	 1	1000	ן ט
534-52-1	4,6-Dinitro-2	-methylpheno.	Ι	1000	U
86-30-6	N-Nitrosodiph	enylamine (1)	400	ប
101-55-3	4-Bromophenyl	-phenylether		400	ַד
118-74-1	Hexachloroben	zene		400	ט
87-86-5	Pentachloroph	enol		1000	ַ
85-01-8	Phenanthrene			400	ប
	Anthracene			400	ប
	Carbazole	-	<u> </u>	400	ប
84-74-2	Di-n-butylpht	halate	-	27	J
	Fluoranthene_			400	บ
129-00-0	Pyrene			400	U
85-68-7	Butylbenzylph	thalate	<u> </u>	400	ប
	3,3 ⁻ Dichloro			400	ប
56-55-3	Benzo(a)anthr	acene		400	ប
218-01-9		****		400	ប
117-81-7	bis(2-Ethylhe	xyl)phthalat	e	87	JB
117-84-0	Di-n-octylpht	halate		400	ប
205-99-2	Benzo(b)fluor	anthene		400	U
207-08-9	Benzo(k)fluor	anthene		400	ប
50-32-8	Benzo(a)pyren	e	!	400	ט
193-39-5	Indeno (1,2,3-	cd)pyrene	l	400	Ū
53-70-3	Dibenz(a,h)an	thracene		400	Ū
191-24-2	Benzo(g,h,i)p	erylene		400	ប
l					

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

FFG21RE

Tab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159 SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27683.09RA

Sample wt/vol:

30.0 (g/mL) G

Lab File ID: P10329.D

Level:

(low/med) LOW

Concentrated Extract Volume:

Date Received: 11/19/96

% Moisture: 18

decanted: (Y/N) N

Date Extracted: 11/20/96

Date Analyzed: 12/10/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: $(Y/N)^TY$

pH: 6.4

500(uL)

Number TICs found: 19

Tab Name: SWL-TULSA FFG22 FFG22 Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27670.10

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10138.D

Level: (low/med) LOW Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N Date Extracted:11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/02/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.8

CAS NO. COMPOUND COMP

108-95-2	Phenol	400-	/ <u>u</u>
111-44-4	bis(2-Chloroethyl)Ether	400	U
95-57-8	2-Chlorophenol	400	U
541-73-1	1,3-Dichlorobenzene	400	บ
106-46-7	1,4-Dichlorobenzene	400	U
95-50-1	1,2-Dichlorobenzene	400	ប
	2-Methylphenol	400	บ
108-60-1	2,2'-oxybis(1-Chloropropane)	400	ซ
106-44-5	4-Methylphenol	400	U
621-64-7	N-Nitroso-di-n-propylamine	400	U
67-72-1	Hexachloroethane	400	U
98-95-3	Nitrobenzene	400	U
78-59-1	Isophorone	400	ש
88-75-5	Isophorone 2-Nitrophenol	400	U
105-67-9	2,4-Dimethylphenol	400	U
111-91-1	bis(2-Chloroethoxy)methane	400	U
120-83-2	2,4-Dichlorophenol	400	U
120-82-1	1,2,4-Trichlorobenzene	400	U
91-20-3	Naphthalene	400	τ
106-47-8	4-Chloroaniline	400	τ
87-68-3	Hexachlorobutadiene	400	τ
59-50-7	4-Chloro-3-Methylphenol	400	τ
91-57-6	2-Methylnaphthalene	400	τ
77-47-4	Hexachlorocyclopentadiene	400	τ
88-06-2	2,4,6-Trichlorophenol	400	τ
95-95-4	2,4,5-Trichlorophenol	1000	τ
	2-Chloronaphthalene	400	ξ
	2-Nitroaniline	1000	Ţ
131-11-3	Dimethylphthalate	400	Ţ
208-96-8	Acenaphthylene	400	τ
606-20-2	2,6-Dinitrotoluene	400	₹
99-09-2	3-Nitroaniline	1000	τ
83-32-9	Acenaphthene	400	Ţ
	· · · · · · · · · · · · · · · · · · ·		

FORM I SV-1

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Tab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27670.10

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10138.D

Level: (low/med) LOW Date Received: 11/19/96 D

% Moisture: 18 decanted: (Y/N) N Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/02/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

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GPC Cleanup: (Y/N) Y pH: 8.8 CONCENTRATION UNITS:

51-28-52,4-Dinitrophenol 1000 100-02-74-Nitrophenol 1000 132-64-9Dibenzofuran 400 121-14-22,4-Dinitrotoluene 400 84-66-2Diethylphthalate 400 7005-72-34-Chlorophenyl-phenylether 400 100-01-6	CAS NO.	COMPOUND (ug/L or	ug/Kg)	UG/KG	Q
100-02-74-Nitrophenol 1000 132-64-9Dibenzofuran 400 121-14-22,4-Dinitrotoluene 400 84-66-2Diethylphthalate 400 7005-72-34-Chlorophenyl-phenylether 400 86-73-7Fluorene 400 100-01-64-Nitroaniline 1000 534-52-14,6-Dinitro-2-methylphenol 1000 86-30-6N-Nitrosodiphenylamine (1) 400 101-55-34-Bromophenyl-phenylether 400 118-74-1Hexachlorobenzene 400 87-86-5Pentachlorophenol 1000 85-01-8Phenanthrene 400 120-12-7Anthracene 400 86-74-8Carbazole 400 84-74-2	51-28-5	2.4-Dinitrophenol		1000	U
132-64-9	100-02-7	4-Nitrophenol		1000	U
84-66-2	132-64-9	Dibenzofuran	 i	400	U
7005-72-34-Chlorophenyl-phenylether 400 86-73-7Fluorene 400 100-01-64-Nitroaniline 1000 534-52-14,6-Dinitro-2-methylphenol 1000 86-30-6N-Nitrosodiphenylamine (1) 400 101-55-34-Bromophenyl-phenylether 400 118-74-1Hexachlorobenzene 400 87-86-5Pentachlorophenol 1000 85-01-8Phenanthrene 400 120-12-7	121-14-2	2,4-Dinitrotoluene		400	U
7005-72-34-Chlorophenyl-phenylether 400 86-73-7Fluorene 400 100-01-64-Nitroaniline 1000 534-52-14,6-Dinitro-2-methylphenol 1000 86-30-6N-Nitrosodiphenylamine (1) 400 101-55-34-Bromophenyl-phenylether 400 118-74-1Hexachlorobenzene 400 87-86-5Pentachlorophenol 1000 85-01-8	84-66-2	Diethylphthalate		400	U
86-73-7	7005-72-3	4-Chlorophenyl-phenylether	=	400	ប
1000 1000	86-73-7	Fluorene		400	ប
86-30-6N-Nitrosodiphenylamine (1) 400 101-55-34-Bromophenyl-phenylether 400 118-74-1Hexachlorobenzene 400 87-86-5Pentachlorophenol 1000 85-01-8Phenanthrene 400 120-12-7Anthracene 400 86-74-8Carbazole 400 84-74-2Di-n-butylphthalate 400 206-44-0Fluoranthene 400 129-00-0				1000	Ū
86-30-6N-Nitrosodiphenylamine (1) 400 101-55-34-Bromophenyl-phenylether 400 118-74-1Hexachlorobenzene 400 87-86-5Pentachlorophenol 1000 85-01-8Phenanthrene 400 120-12-7Anthracene 400 86-74-8Carbazole 400 84-74-2Di-n-butylphthalate 400 206-44-0Fluoranthene 400 129-00-0	534-52-1	4,6-Dinitro-2-methylphenol		1000	บ
101-55-34-Bromophenyl-phenylether 400 118-74-1Hexachlorobenzene 400 87-86-5Pentachlorophenol 1000 85-01-8Phenanthrene 400 120-12-7Anthracene 400 86-74-8Carbazole 400 84-74-2Di-n-butylphthalate 400 206-44-0Fluoranthene 400 129-00-0Pyrene 400 85-68-7Butylbenzylphthalate 400 91-94-13,3'-Dichlorobenzidine 400 56-55-3	86-30-6	N-Nitrosodiphenylamine (1)		400	U
118-74-1	101-55-3	4-Bromophenyl-phenylether		400	U
85-01-8Phenanthrene 400 120-12-7Anthracene 400 86-74-8Carbazole 400 84-74-2Di-n-butylphthalate 400 206-44-0Fluoranthene 400 129-00-0Pyrene 400 85-68-7	118-74-1	Hexachlorobenzene		400	U
120-12-7Anthracene 400 86-74-8Carbazole 400 84-74-2Di-n-butylphthalate 400 206-44-0Fluoranthene 400 129-00-0	87-86-5	Pentachlorophenol		1000	บ
86-74-8Carbazole 400 84-74-2Di-n-butylphthalate 400 206-44-0Fluoranthene 400 129-00-0Pyrene 400 85-68-7Butylbenzylphthalate 400 91-94-13,3'-Dichlorobenzidine 400 56-55-3Benzo(a)anthracene 400 218-01-9Chrysene 400 117-81-7					Ū
84-74-2Di-n-butylphthalate 400 206-44-0Fluoranthene 400 129-00-0Pyrene 400 85-68-7Butylbenzylphthalate 400 91-94-13,3'-Dichlorobenzidine 400 56-55-3Benzo(a)anthracene 400 218-01-9					IJ
206-44-0Fluoranthene 400 129-00-0Pyrene 400 85-68-7			<u>_</u>		U
129-00-0					U
85-68-7					U
91-94-13,3'-Dichlorobenzidine 400 56-55-3Benzo(a)anthracene 400 218-01-9Chrysene 400 117-81-7bis(2-Ethylhexyl)phthalate 400 117-84-0Di-n-octylphthalate 400 205-99-2Benzo(b)fluoranthene 400 207-08-9Benzo(k)fluoranthene 400 50-32-8Benzo(a)pyrene 400 193-39-5Indeno(1,2,3-cd)pyrene 400	129-00-0	Pyrene		;	σ
56-55-3Benzo(a) anthracene 400 218-01-9Chrysene 400 117-81-7bis(2-Ethylhexyl)phthalate 400 117-84-0Di-n-octylphthalate 400 205-99-2Benzo(b)fluoranthene 400 207-08-9Benzo(k)fluoranthene 400 50-32-8Benzo(a)pyrene 400 193-39-5Indeno(1,2,3-cd)pyrene 400	85-68-7	Butylbenzylphthalate			ប
218-01-9Chrysene 400 117-81-7bis(2-Ethylhexyl)phthalate 400 117-84-0Di-n-octylphthalate 400 205-99-2Benzo(b)fluoranthene 400 207-08-9Benzo(k)fluoranthene 400 50-32-8Benzo(a)pyrene 400 193-39-5Indeno(1,2,3-cd)pyrene 400	91-94-1	3,3'-Dichlorobenzidine		400	ប
218-01-9Chrysene 400 117-81-7bis(2-Ethylhexyl)phthalate 400 117-84-0Di-n-octylphthalate 400 205-99-2Benzo(b)fluoranthene 400 207-08-9Benzo(k)fluoranthene 400 50-32-8Benzo(a)pyrene 400 193-39-5Indeno(1,2,3-cd)pyrene 400	56-55-3	Benzo(a)anthracene		400	ប
117-81-7bis(2-Ethylhexyl)phthalate 117-84-0Di-n-octylphthalate 205-99-2Benzo(b)fluoranthene 207-08-9Benzo(k)fluoranthene 400 50-32-8Benzo(a)pyrene 400 193-39-5Indeno(1,2,3-cd)pyrene 400	218-01-9	Chrysène		400	U
117-84-0Di-n-octylphthalate 400 205-99-2Benzo(b)fluoranthene 400 207-08-9Benzo(k)fluoranthene 400 50-32-8Benzo(a)pyrene 400 193-39-5Indeno(1,2,3-cd)pyrene 400	117-81-7	bis(2-Ethylhexyl)phthalate	<u>-</u>	400	U
205-99-2Benzo(b)fluoranthene 400 207-08-9Benzo(k)fluoranthene 400 50-32-8Benzo(a)pyrene 400 193-39-5Indeno(1,2,3-cd)pyrene 400	117-84-0	Di-n-octvlphthalate	<u> </u>	400	U
207-08-9Benzo(k)fluoranthene 400 50-32-8Benzo(a)pyrene 400 193-39-5Indeno(1,2,3-cd)pyrene 400	205-99-2	Benzo(b)fluoranthene	<u> </u>	400	U
50-32-8Benzo(a)pyrene 400 193-39-5Indeno(1,2,3-cd)pyrene 400	207-08-9	Benzo(k)fluoranthene	<u> </u>	400	U
193-39-5Indeno(1,2,3-cd)pyrene 400	50-32-8	Benzo(a)pyrene		400	υ
	193-39-5	Indeno(1,2,3-cd)pyrene		400	U
53-70-3Dibenz(a,h)anthracene 400	53-70-3	Dibenz(a,h)anthracene		400	ប
191-24-2Benzo(g,h,i)perylene 400	191-24-2	Benzo(q,h,i)perylene		400	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLMO3.0

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

FFG22

Tab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159 SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.10

Sample wt/vol:

30.0 (g/mL) G

Lab File ID:

P10138.D

Level:

(low/med)

LOW

Date Received:

% Moisture: 18

decanted: (Y/N) N

Date Extracted:11/19/96

Concentrated Extract Volume:

Date Analyzed: 12/02/96

Injection Volume:

2.0(uL)

Dilution Factor 1.0

GPC Cleanup:

(Y/N) Y

рH: 8.8

500(uL)

Number TICs found: 31

t	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·	ı
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	3.281	420	J
2.	UNKNOWN	3.655	600	JB
3.	(180	J
4.	UNKNOWN	3.852	360	JВ
5.	UNKNOWN	3.990	180	JB
	UNKNOWN	4.059	1900	NJA
	Propanal, 2-hydroxy-2-methyl	4.158	260	J
7.	UNKNOWN	4.236		ᆛ
8.	UNKNOWN	4.286	90	J
9.	UNKNOWN	4.443	330	ᆛ
10.	UNKNOWN	4.926	180	힐
11.	-Hexenone, -methyl-	5.359	140	با
12.	UNKNOWN	14.913	100	긴
13.	UNKNOWN	18.311	320	J J J J
14.	UNKNOWN	18.478	300	آر
15.	UNKNOWN	20.106	180	<u> </u>
16.	UNKNOWN	20.204	240	J
17.	UNKNOWN	20.362	210	J
18.	UNKNOWN	20.787	210	J
19.	UNKNOWN	21.211	220	J
20.	UNKNOWN	21.557	360	J
21.	UNKNOWN	22.189	270	J
22.	UNKNOWN	22.407	180	J
23.	UNKNOWN	22.555	490	J
24.	UNKNOWN	22.663	580	J
25.	UNKNOWN	22.703	780	J
26.	UNKNOWN	22.920	480	ממממממממ
27.	UNKNOWN	23.147	180	J
28.	UNKNOWN	23.296	380	J
29.	UNKNOWN	23.552	1000	J
30.	UNKNOWN	23, 641	330	J
		1 -7		
i	I	ı <u> </u>	I	

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

FFG22

SWL-TULSA Contract: 68-D5-0022

Tab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27670.10

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10138.D

Level: (low/med) LOW Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/02/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.8

CONCENTRATION UNITS:

Number TICs found: 31 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	24.924	180	J
3. 4. 5.				
6.				
8. 9. 10.				
12.				
14.				
16. 17.				
18. 19. 20.				
21. 22. 23.				
25.				
27.				
29. 30.				

FFG22RE

ab Name: SWL-TULSA Contract: 68-D5-0022

Case No.: 25159 SAS No.: SDG No.: FFG02 Lab Code: AATS

Matrix: (soil/water) SOIL Lab Sample ID: 27670.10RA

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10197.D

Date Received: 11/29/96 12/04/96 Level: (low/med) LOW

% Moisture: 18 decanted: (Y/N) N Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/05/96

Dilution Factor: 1.0 Injection Volume: 2.0(uL)

GPC Cleanup: (Y/N) Y pH: 8.8

CONCENTRATION UNITS: CAS NO. COMPOUND (ug/L or ug/Kg) UG/KG

CAD NO.	COFFOOND (ug/E of ug/	rg, od/rd	
108-95-2		400	υ
111-44-4	bis(2-Chloroethyl)Ether	400	ט
95-57-8	2-Chlorophenol	400	ט
541-73-1	1,3-Dichlorobenzene	400	ט
106-46-7	1,4-Dichlorobenzene	400	ַ
95-50-1	1,2-Dichlorobenzene	400	U
95-48-7	2-Methylphenol	400	บ
108-60-1	2,2'-oxybis(1-Chloropropane)	400	U
106-44-5	4-Methylphenol	400	ש
621-64-7	N-Nitroso-di-n-propylamine	400	U
67-72-1	Hexachloroethane	· 400	Ū
98-95-3	Nitrobenzene	400	U
78-59-1	Isophorone	400	บ
88-75-5	2-Nitrophenol	400	ប
105-67-9	2,4-Dimethylphenol	400	ט
111-91-1	bis(2-Chloroethoxy)methane	400	ប
120-83-2	2,4-Dichlorophenol	400	ប
120-82-1	1,2,4-Trichlorobenzene	400	σ
91-20-3	Naphthalene	400	ט
	4-ChloroaniTine	400	U
	Hexachlorobutadiene	400	σ
59-50-7	4-Chloro-3-Methylphenol	· 400	U
91-57-6	2-Methylnaphthalene	400	U
77-47-4	Hexachlorocyclopentadiene	400	บ
88-06-2	2,4,6-Trichlorophenol	400	ប
95-95-4	2,4,5-Trichlorophenol	1000	U
	2-Chloronaphthalene	400	U
	2-Nitroaniline	1000	บ
131-11-3	Dimethylphthalate	400	ប
208-96-8	Acenaphthylene	400	ប
606-20-2	2,6-Dinitrotoluene	400	U
99-09-2	3-Nitroaniline	1000	U
83-32-9	Acenaphthene	400	U

FORM I SV-1

FFG22RE Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27670.10RA

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10197.D

Level: (low/med) LOW Date Received: 11/19/96 12/2019

% Moisture: 18 decanted: (Y/N) N Date Extracted:11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/05/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.8

ab Name: SWL-TULSA

CAS NO.	COMPOUND	CONCENTRA (ug/L or			Q
51-28-5	2,4-Dinitroph	enol		1000 1000	Ū
	4-Nitrophenol		<u></u>	400	וט וט
	Dibenzofuran	1		400	اة
	2,4-Dinitroto			400	ŭ
7005 72 2	Diethylphthal 4-Chloropheny	ate		400	Ü
06-72-7	4-cnroropheny	т-БиепАтеспет	·—I	400	Ö
86-73-7	ridorene 4-Nitroanilin		<u>-</u>	1000	اق
	4-NICLOANIIIN 4,6-Dinitro-2			1000	اق
	N-Nitrosodiph			400	ان
	4-Bromophenyl			400	וֹט
	Hexachloroben			400	υ
	Pentachloroph			1000	ŭ
	Phenanthrene	GHOT		400	וֹט
	Anthracene		-	400	اَن
	Carbazole			400	บีไ
84-74-2	Di-n-butylpht	halate		400	ן ט
	Fluoranthene			400	ប
129-00-0				400	ש
85-68-7	Butylbenzylph	thalate		400	ט
91-94-1	3,3°-Dichloro	benzidine	<u> </u>	400	י די
	Benzo(a)anthr			400	ប
218-01-9	Chrysene			400	U
	bis(2-Ethylhe	xyl)phthalate	•	400	ן ט
117-84-0	Di-n-octylpht	halate	<u></u>	400	ן ט
	Benzo(b)fluor		1	400	ַ
	Benzo(k)fluor			400	<u>ט</u>
	Benzo(a)pyren			400	U
	Indeno(1,2,3-			400	ַ
	Dibenz(a,h)an			400	ַ
191-24-2	Benzo(g,h,i)p	erylene		400	ע
			I		l

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

FFG22RE

ab Name: SWL-TULSA

Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159

SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.10RA

Sample wt/vol:

30.0 (g/mL) G

Lab File ID:

P10197.D

Date Received: 11/19/96 45/14/91

Level: (low/med)

LOW

% Moisture: 18

decanted: (Y/N) N

Date Extracted: 11/19/96

Concentrated Extract Volume:

500(uL)

Date Analyzed: 12/05/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 8.8

Number TICs found: 26

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	3.095	290	J
2.	UNKNOWN	3.478	470	JВ
3.	UNKNOWN	3.665	190	JB
4.	UNKNOWN	3.803	320	J
5. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.971	1700	NJAB
6.	UNKNOWN	4.049	, 210	JB
7.	UNKNOWN	4.167	96	J
8.	UNKNOWN	4.246	190	J
9.	UNKNOWN	4.709	180	J
10.	UNKNOWN	4.925	120	J
11.	UNKNOWN	5.142	120	JB
12.	UNKNOWN	6.392	83	J
13.	UNKNOWN	14.666	160	J J
14.	UNKNOWN	14.726	130	<u>J</u>
15.	Unknown	16.409	510	1
16.	Unknown	18.201	410	<u>ī</u>
17.	UNKNOWN	20.103	490	J J
18.	UNKNOWN	21.030	760	
19.	UNKNOWN	21.474	390	J
20.	UNKNOWN	22.253	470	<u>J </u>
21.	UNKNOWN	22.342	820	J
22.	UNKNOWN	22.382	1100	J
23.	UNKNOWN	22.589	750	J
24.	UNKNOWN	22.825	440	J
25.	UNKNOWN	23.190	1500	<u> </u>
26.	UNKNOWN	23.289	460	J
27				
28.		· · · · · · · · · · · · · · · · · · ·		
29.				
30				ļ
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FFG23

Contract: 68-D5-0022 ab Name: SWL-TULSA

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27670.11

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10220.D

Level: (low/med) LOW Date Received: 11/49/96

% Moisture: 18 decanted: (Y/N) N Date Extracted:11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/08/96

Injection Volume: 2.0(uL) Dilution Factor 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

CONCENTRATION UNITS: COMPOUND CAS NO. (ug/T. or ug/Kg) UG/KG

	COMPOUND (ug/L or ug/	ng, oo,no	Q
108-95-2	Phenol	400	
111-44-4	bis(2-Chloroethyl)Ether	400	U
95-57-8	2-Chlorophenol	400	U
541-73-1	1,3-Dichlorobenzene	400	ប
106-46-7	1,4-Dichlorobenzene	400	ប
95-50-1	1,2-Dichlorobenzene	400	U
95-48-7	2-Methylphenol	400	ប
108-60-1	2.2'-oxybis(1-Chloropropage)	400	ប
106-44-5	4-Methylphenol	400	ប
621-64-7	N-Nitroso-di-n-propylamine	400	ប
67-72-1	Hexachloroethane	400	U
98-95-3	Nitrobenzene	400	U
78-59-1	Isophorone	400	ប
88-75-5	2-Nitrophenol	400	U
105-67-9	2,4-Dimethylphenol	400	U
111-91-1	bis(2-Chloroethoxy)methane	400	U
120-83-2	2.4-Dichlorophenol	400	U
120-82-1	1,2,4-Trichlorobenzene	400	U
91-20-3	Naphthalene	400	U
106-47-8	4-Chloroaniline	400	Ū
87-68-3	Hexachlorobutadiene	400	U
59-50-7	4-Chloro-3-Methylphenol	400	U
91-57-6	2-Methylnaphthalene	400	U
77-47-4	Hexachlorocyclopentadiene	400	ប
88-06-2	2,4,6-Trichlorophenol	400	ប
95-95-4	2.4.5-Trichlorophenol	1000	Ū
91-58-7	2-Chloronaphthalene	400	ប
88-74-4	2-Nitroaniline	1000	ប
131-11-3	Dimethylphthalate	400	ប
208-96-8	Acenaphthylene	400	บ
606-20-2	2.6-Dinitrotoluene	400	บ
99-09-2	3-Nitroaniline	1000	ប
83-32-9	Acenaphthene	400	ប

FFG23

ab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27670.11

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10220.D

Level: (low/med) LOW Date Received: 11/19/96 12/2019)

% Moisture: 18 decanted: (Y/N) N Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/08/96

Injection Volume: ?.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

CAS NO.	COMPOUND	CONCENT (ug/L o				Q
	2,4-Dinitropheno	ol			1000	ប្
100-02-7	4-Nitrophenol				1000	ā
	Dibenzofuran				400	ប្រ
121-14-2	2,4-Dinitrotolue	ene			400	ַם
84-66-2	Diethylphthalate	> 			400	ប្
/005-/2-3	4-Chlorophenyl-p	phenyleti	ner		400	U
86-73-7		· · · · · · · · · · · · · · · · · · ·	-		400	U
	4-Nitroaniline_				1000	ש
	4,6-Dinitro-2-me			<u></u>	1000	ט
86-30-6	N-Nitrosodipheny	lamine ((1)		400	U
101-55-3	4-Bromophenyl-pf	enylethe	er_		400	ប
118-74-1	Hexachlorobenzer	1e			400	ប
87-86-5	Pentachloropheno	01		_	1000	ַ
	Phenanthrene	-			35	J
	Anthracene				400	บ
86-74-8	Carbazole		.,		400	וט
84-74-2	Di-n-butylphthal	Late			29	JB
206-44-0	Fluoranthene	•		— ₁	400	U
129-00-0	Pvrene		-		94	J
	Butylbenzylphtha	late			59	J
91-94-1	3,3'-Dichlorober	nzidine			400	U
56-55-3	Benzo(a)anthrace	ene			400	σ
218-01-9	Chrysene			-4	82	J
	bis(2-Ethylhexy)	\phthala	ate		62	JB
	Di-n-octylphthal			<u></u>	400	ับ
	Benzo(b)fluorant				31	J
	Benzo(k)fluorant				26	J
50-32-8	Benzo(a)pyrene			_]	54	Ĵ
193-39-5	Indeno $(1,2,3-cd)$	nurono		 1	51	J
53-70-3	Dibenz(a,h)anthi	Lacene ' h'i rene'''		7	26	J
101-24-2	Benzo(q,h,i)pery	zlopo		─ 1	, 190	J
191-24-2	benzo(g,n,r)per	A TEHE	······································	[y 190	

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

FFG23

ab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27670.11

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10220.D

Level: (low/med) LOW Date Received: 11/19/96 12/24/96

% Moisture: 18 decanted: (Y/N) N Date Extracted:11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/08/96

Injection Volume: 2.9(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

Number TICs found: 26 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

, <u>-</u>				
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q =====
1. 115-19-5	3-Butyn-2-ol, 2-methyl-	3.421	1000	ŊJ
2.	UNKNOWN	3.598	220	JB
3.	-Pentene, -methyl-	3.737	800	J
4. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.905	2100	NJAB
5.	UNKNOWN AMIDE	3.983	490	J
6. 694-87-1	Bicyclo[4.2.0]octa-1,3,5-tri	4.418	160	IJ
7.	UNKNOWN	4.615	450	J
8. 110-13-4	2,5-Hexanedione	4.793	130	ŊJ
9.	UNKNOWN	4.823	270	J
10.	UNKNOWN	5.040	170	JB
11.	UNKNOWN	6.274	84	J
12.	UNKNOWN	6.520	85	J
13.	UNKNOWN	14.473	140	
14.	-Pentadecenoic acid	14.543	220	J
15. 57-10-3	Hexadecanoic acid	14.593	230	ИJ
16.	Pyrene, -methyl-	16.876	96	J
17.	Pyrene, -methyl-	17.038	180	J
18.	Benzaldehyde, -benzyloxyfl	17.937	910	
19.	UNKNOWN	18.768	300	J
20.	UNKNOWN	20.807	320	
21.	UNKNOWN	22.186	530	J
22.	UNKNOWN	22.216	980	
23.	Ursene, -methoxy-, (.beta.	22.419	590	J.
24.	UNKNOWN	22.784	430	
25.	UNKNOWN	23.007	1200	J
26.	Stigmastenone	23.108	580	J
27]
28				
29				
30.				
				l

ab Name: SWL-TULSA ____ Contract: 68-D5-0022 _____

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Edb code: Milb Case No.: 23133 BAB No.: 556 No.: 11602

Matrix: (soil/water) SOIL Lab Sample ID: 27670.11RA

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10260.D

Level: (low/med) LOW Date Received: 11/19/96 13/34/96

% Moisture: 18 decanted: (Y/N) N Date Extracted:11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/09/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

		CONCENTRA	ATION U	NITS:	
CAS NO.	COMPOUND	(ug/L or	ug/Kg)	UG/KG	Q
1					
108-95-2				400	וַם
111-44-4	bis(2-Chloroe	thyl)Ether	I	400	ט
	2-Chloropheno		1	400	וט
541-73-1	1,3-Dichlorob	enzene		400	ן ט
106-46-7	1,4-Dichlorob	enzene		400	បុ
95-50-1	1.2-Dichlorob	enzene		400	וט
95-48-7	2-Methylpheno	1	{}	400	וט
108-60-1	2,2'-oxvbis(1	-Chloropropar	ne)	400	ប
106-44-5	4-Methylpheno	1		400	ט
621-64-7	N-Nitroso-di-	n-propylamine	3	400	ן ש
67-72-1	Hexachloroeth	ane	— _I	400	ប
98-95-3	Nitrobenzene	· · · · · · · · · · · · · · · · · · ·		400	ប
78-59-1	Isophorone		 i	400	ប
88-75-5	2-Nitrophenol	· · · · · · · · · · · · · · · · · · ·		400	ប
105-67-9	2,4-Dimethylp	henol	—	400	ប
111-91-1	bis(2-Chloroe	thoxy methane	<u> </u>	400	ប
120-83-2	2,4-Dichlorop	henoĺ		400	ט
120-82-1	1,2,4-Trichlo	robenzene	77	400	וש
91-20-3	Naphthalene		-	400	ט
106-47-8	4-ChloroaniTi	ne		400	ש
	Hexachlorobut		 i	400	י ס
	4-Chloro-3-Me		i	400	ש
91-57-6	2-Methylnapht	halene		400	ט
	Hexachlorocyc			400	ט
	2,4,6-Trichlo			400	ប
	2,4,5-Trichlo			1000	ប
	2-Chloronapht			400	ט
	2-Nitroanilin			1000	U
	Dimethylphtha		 1	400	ប
	Acenaphthylen			400	Ū
	2,6-Dinitroto		—	400	บ
99-09-2	3-Nitroanilin	P		1000	Ŭ
	Acenaphthene	<u> </u>		400	Ū
	opooo_				
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FORM I SV-1

OLMO3.0

ab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: 27670.11RA

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10260.D

Level: (low/med) LOW Date Received: 11/19/96

% Moisture: 18 decanted: (Y/N) N Date Extracted: 11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/09/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

CAS NO. COMPOUND CONCENTRATION UNITS:

(uq/L or uq/Kq) UG/KG

	(ug/II of ug/	ng, och	*
51-28-5	2,4-Dinitrophenol	1000	ָּט
100-02-7	4-Nitrophenol	1000	ប
132-64-9	Dibenzofuran	400	ָּט
121-14-2	2,4-Dinitrotoluene	400	ប
84-66-2	Diethylphthalate	400	. ע
7005-72-3	4-Chlorophenyl-phenylether_	400	U
86-73-7	Fluorene	400	U
100-01-6	4-Nitroaniline	1000	ប
534-52-1	4,6-Dinitro-2-methylphenol	1000	ប
86-30-6	N-Nitrosodiphenylamine (1)	400	ប
101-55-3	4-Bromophenyl-phenylether	400	ប
118-74-1	Hexachlorobenzene	400	ប
87-86-5	Pentachlorophenol	1000	ប
85-01-8	Phenanthrene	35	J
120-12-7	Anthracene	400	บ
	Carbazole	400	ប
84-74-2	Di-n-butylphthalate -	28	JB
206-44-0	Fluoranthene	23	J
129-00-0	Pyrene	90	J
	Butylbenzylphthalate	81	J
91-94-1	3,3'-Dichlorobenzidine	400	ប
56-55-3	Benzo(a)anthracene	400	U
218-01-9	Chrysene	77	្រ រ
117-81-7	bis(2-Ethylhexyl)phthalate	79	JB
117-84-0	Di-n-octvlphthalate	400	บ
205-99-2	Benzo(b)fluoranthene	35	J
207-08-9	Benzo(k)fluoranthene	41	J
50-32-8	Benzo(a)pyrene	60	J
193-39-5	Indeno(1,2,3-cd)pyrene	29	J
53-70-3	Dibenz(a,h)anthracene	400	ן ש
191-24-2	Benzo(g,h,i)perylene	110	J
l			l

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLMO3.0

1F SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

FFG23RE

ab Name: SWL-TULSA

- Contract: 68-D5-0022

Lab Code: AATS

Case No.: 25159 SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.11RA

30.0 (g/mL) G

Lab File ID:

P10260.D

Sample wt/vol:

Level: (low/med) LOW

Date Received:

% Moisture: 18

decanted: (Y/N) N

Date Extracted:11/19/96

Concentrated Extract Volume: 500(uL)

Date Analyzed: 12/09/96

Injection Volume:

2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 8.6

Number TICs found: 35

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	3.371	600	J
2.	-Butenol, -dimethyl-	3.559	180	J
3.	UNKNOWN	3.687	450	J
4. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.865	2300	NJAB
5. 5076-20-0	Oxirane, tetramethyl-	3.944	450	IJ
6.	UNKNOWN	4.566	190	J
7.	UNKNOWN	4.774	340	J
8.	(5H)-Furanone, -dimethyl-	5.001	160	J
9.	-Pentenone, -dimethyl-	5.129	94	J
10.	UNKNOWN	6.472	97	J
11.	UNKNOWN ORGANIC ACID	11.816	86	
12. 109-29-5	Oxacycloheptadecan-2-one	14.505	340	IJ
13. 57-10-3	Hexadecanoic acid	14.566	300	ŊJ
14.	UNKNOWN	15.431	84	J
15.	-Octadecadienal, ()-	15.784	210	J
16.	UNKNOWN ORGANIC ACÍD	15.814	190	J
17. 57-11-4	Octadecanoic acid	15.905	180	ŊJ
18.	UNKNOWN PAH	16.208	200	J
19.	Pyrene, -methyl-	16.834	220	J
20.	Pyrene, -methyl-	16.996	460	J
21.	Pyrene, -dimethyl-	17.726	190	J
22.	UNKNOWN	17.888	520	J
23. 84-15-1	o-Terphenyl	17.939	220	ŊJ
24.	UNKNOWN	18.365	160	J
25.	(-Tetramethylhexadeca-1,	19.677	260	J
26.	ÜNKNOWN	19.890	270	J
27.	UNKNOWN.	19.992	260	ງ ງ ງ
28.	UNKNOWN	20.756	370	J
29.	UNKNOWN	22.046	380	
30.	Oleanene	22.138	470	J

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

FFG23RE

Tab Name: SWL-TULSA

Contract: 68-D5-0022

EPA SAMPLE NO.

Lab Code: AATS

Case No.: 25159 SAS No.:

SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: 27670.11RA

Sample wt/vol:

30.0 (q/mL) G

Lab File ID:

P10260.D

Date Received: 11/19/96

Level:

(low/med) LOW '

% Moisture: 18

decanted: (Y/N) N

Date Extracted:11/19/96

Concentrated Extract Volume:

Date Analyzed: 12/09/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup:

(Y/N) Y

pH: 8.6

500(uL)

Number TICs found: 35

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 2. 3. 4.	UNKNOWN Ursene, -methoxy-, (.beta. UNKNOWN UNKNOWN Stigmasten-one	22.168 22.360 22.725 22.948 23.049	730 360 270 860 290	J J J
6. 7. 8. 9. 10.				
12. 13. 14. 15.				
18. 19. 20. 21.				
24. 25. 26.				
28. 29. 30.				

SBLK1 ab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Lab Sample ID: BL1119SB Matrix: (soil/water) SOIL

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10216.D

Level: (low/med) LOW Date Received: / /

% Moisture: 0 decanted: (Y/N) N Date Extracted:11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/07/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0 CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/		Q .
108-95-2 111-44-4 95-57-8 541-73-1 95-50-1 95-48-7 108-60-1 106-44-5 621-64-7 98-95-3 78-59-1 88-75-5 105-67-9 111-91-1 120-83-2	Phenolbis(2-Chloroet2-Chlorophenol1,3-Dichlorobe1,4-Dichlorobe1,2-Dichlorobe2-Methylphenol2,2'-oxybis(14-MethylphenolN-Nitroso-di-rHexachloroethaNitrobenzeneIsophorone2,4-Dimethylphenol2,4-Dichlorophenol	chyl)Etherenzene_enzene_enzene_enzene	Kg) UG/KG 330 330 330 330 330 330 330 330 330 3	ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט
111-91-1 120-83-2	bis(2-Chloroet	thoxy)methane	330 330 330	U U U
91-20-3 106-47-8 87-68-3 59-50-7	Naphthalene4-ChloroaniliiHexachlorobuta4-Chloro-3-Met	ne ndiene hylphenol	330 330 330 330	U U U
77-47-4 88-06-2 95-95-4	2-Methylnaphth Hexachlorocycl 2,4,6-Trichlor 2,4,5-Trichlor	cophenol cophenol	330 330 330 830 830 330	ט ט ט
88-74-4 131-11-3 208-96-8 606-20-2	2-NitroanilineDimethylphthaAcenaphthylene2,6-Dinitroto	lateluene	830 330 330 330	U U U
99-09-2	3-Nitroaniline Acenaphthene_	9	830 330	U U

ab Name: SWL-TULSA Contract: 68-D5-0022 ____

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: BL1119SB

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10216.D

Level: (low/med) LOW Date Received: / /

% Moisture: 0 decanted: (Y/N) N Date Extracted:11/19/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/07/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

Difficion ractor. 1.0

GPC Cleanup: (Y/N) Y pH: 7.0

CONCENTRATION UNITS:

CAS NO.	COMPOUND (ug/L or ug)	/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	830	U
100-02-7	4-Nitrophenol	830	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	ប
84-66-2	Diethylphthalate	21	J
7005-72-3	4-Chlorophenyl-phenylether_	330	U
86-73-7	Fluorene	330	บ
100-01-6	4-Nitroaniline	830	U
534-52-1	4,6-Dinitro-2-methylphenol	830	ប
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	บ
87-86-5	Pentachlorophenol	830	ซ
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
	Carbazole	330	U
84-74-2	Di-n-butylphthalate	22	J
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	ប
85-68-7	Butylbenzylphthalate	330	ប
91-94-1	3,3'-Dichlorobenzidine	j 330 <u>j</u>	ប
56-55-3	Benzo(a)anthracene	330	ប
218-01-9	Chrysèné	330	σ
117-81-7	bis(2-Ethylhexyl)phthalate	/ 42	J
117-84-0	Di-n-octvlphthalate	330	U
205-99-2	Benzo(b)fluoranthene	330	U
207-08-9	Benzo(k)fluoranthene	330	ប
50-32-8	Benzo(a)pyrene	330	U
193-39-5	Indeno(1,2,3-cd)pyrene	330	ט
53-70-3	Dibenz(a,h)anthracene	330	U
191-24-2	Benzo(g,h,i)perylene	330	ប
		I	

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

SBLK1

ab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: BL1119SB

Sample wt/vol: 30.0 (q/mL) G

Lab File ID: P10216.D

Level: (low/med) LOW

Date Received:

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Concentrated Extract Volume: 500(uL)

% Moisture: 0 decanted: (Y/N) N Date Extracted:11/19/96

Date Analyzed: 12/07/96

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0

Number TICs found: 17

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
CAS NUMBER 1. 2. 3. 123-42-2 4. 5. 6. 7. 111-90-0 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29.	COMPOUND NAME -Pentene, -dimethyl- UNKNOWN 2-Pentanone, 4-hydroxy-4-met UNKNOWN UNKNOWN UNKNOWN Ethanol, 2-(2-ethoxyethoxy)- '-Biphenyl, '-diethyl- UNKNOWN UNKNOWN UNKNOWN UNKNOWN UNKNOWN AMIDE UNKNOWN AMIDE UNKNOWN AMIDE UNKNOWN AMIDE UNKNOWN AMIDE UNKNOWN AMIDE UNKNOWN AMIDE ONENOWN PSi.,.psiCarotene,	3.450 3.568 3.904 4.052 5.038 5.156	EST. CONC. 82 590 1600 70 150 180 67 270 73 160 130 150 220 2200 150 1200 350	J AUN AUN U U U U U U U

ab Name: SWL-TULSA Contract: 68-D5-0022 SBLK2

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: BL1120SA

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10248.D

Level: (low/med) LOW Date Received: / /

% Moisture: 0 decanted: (Y/N) N Date Extracted:11/20/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/08/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0

CAS NO. COMPOUND CONCENTRATION UNITS:

(ug/L or úg/Kg) UG/KG Q

CAD NO.	COMPOUND (ug/L or ug/	kg) od/ko	<u> </u>
108-95-2	Phenol	330	 U
	bis(2-Chloroethyl)Ether_	330	Ū
95-57-8	2-Chlorophenol	330	U
541-73-1	1.3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U.
95-50-1	1,4-Dichlorobenzene 1,2-Dichlorobenzene 2-Methylphenol	330	U
95-48-7	2-Methylphenol	330	ש
108-60-1	2,2'-oxybis(1-Chloropropane)	330	Ū
106-44-5	4-Methylphenol	330	σ
621-64-7	N-Nitroso-di-n-propylamine	330	ប
67-72-1	Hexachloroethane	330	ប
98-95-3	Nitrobenzene	330	U
78-59-1	Tsophorope	330	ប
88-75-5	2-Nitrophenol	330	U
105-67-9	2-Nitrophenol2,4-Dimethylphenolbis(2-Chloroethoxy)methane	330	U
111-91-1	bis(2-Chloroethoxy)methane	330	U
ユスリーとろーノーーー・	/.4-Dichioropheno:	330	U
120-82-1	1,2,4-Trichlorobenzene	330	ប
91-20-3	Naphthalene	330	ប
106-47-8	4-Chloroaniline	330	ប
87-68-3	Hexachlorobutadiene	330	บ
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	ប
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	830	U
91-58-7	2-Chloronaphthalene	330	ប
88-74-4	2-Nitroaniline	830	ប
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	ប
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	830	U
	Acenaphthene	330	U
	-		

FORM I SV-1

SBLK2

ab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: BL1120SA

Sample wt/vol: 30.0 (g/mL) G Lab File ID: P10248.D

Level: (low/med) LOW Date Received: / /

% Moisture: 0 decanted: (Y/N) N Date Extracted:11/20/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/08/96

Injection Volume: 2.0(uL) Dilution Facto: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0

G7 G 170		CONCENTRA			•
CAS NO.	COMPOUND	(ug/L or	ug/Kg)	UG/KG	-Q
51-28-5	2,4-Dinitrophe	nol		830	
100-02-7	4-Nitrophenol		—	830	Ü
132-64-9	Dibenzofuran	-		330	Ū
121-14-2	2,4-Dinitrotol	uene		330	υ
84-66-2	Diethylphthala	te		330	บ
7005-72-3	4-Chlorophenyl	-phenylether	—I	330	U
86-73-7	Fluorene			330	ט
100-01-6	4-Nitroaniline			830	ט
534-52-1	4,6-Dinitro-2-	methylphenol	 1	830	U
86-30-6	N-Nitrosodiphe	nylamine (1)		330	ט
101-55-3	4-Bromophenyl-	phenylether		330	บ
118-74-1	Hexachlorobenz	ene		330	ប
87-86-5	Pentachlorophe	nol		830	ប
85-01-8	Phenanthrene			330	ប
	Anthracene			330	ប
	Carbazole			330	ប
	Di-n-butylphth	alate		330	ប
	Fluoranthene			330	U
129-00-0	Pyrene		l	330	ש
85-68-7	Butylbenzylpht	halate	1	330	ŋ
91-94-1	3,3 -Dichlorob	enzidine		330	U
56-55-3	Benzo(a)anthra	cene		330	U
	Chrysene		!	330	ש
117-81-7	bis(2-Ethylhex	yl)phthalate		V 21	J
117-84-0	Di-n-octylphth	alate		330	Ū
205-99-2	Benzo(b)fluora	nthene		330	ប្
207-08-9	Benzo(k)fluora	nthene		330	Ŭ
50-32-8	Benzo(a)pyrene			330	U
193-39-5	Indenò(1,2,3-c	d)pyrene		330	Ū
53-70-3	Dibenz(a,h)ant	nracene		330	U
191-24-2	Benzo(g,h,i)pe	rytene		330	ប
I			l		

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

1F SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

SBLK2 Contract: 68-D5-0022

1b Name: SWL-TULSA

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL

Lab Sample ID: BL1120SA

Sample wt/vol:

30.0 (g/mL) G

Lab File ID: P10248.D

Level: (low/med)

Date Received:

% Moisture: 0

decanted: (Y/N) N

Date Extracted: 11/20/96

Concentrated Extract Volume:

500(uL)

Date Analyzed: 12/08/96

Injection Volume: 2.0(uL)

LOW

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 7.0

Number TICs found: 5

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21.	COMPOUND NAME 2-Pentanone, 4-hydroxy-4-met UNKNOWN UNKNOWN UNKNOWN ORGANIC ACID -Dodecatrienol, -trimethy		•	
21. 22. 23. 24. 25. 26. 27. 28. 29. 30.				

SBLK3 ab Name: SWL-TULSA Contract: 68-D5-0022

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: BL1218SA

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M4045.D

Level: (low/med) Date Received: / / LOW

% Moisture: 0 decanted: (Y/N) N Date Extracted: 12/18/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/20/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0

CONCENTRATION UNITS: CAS NO. COMPOUND (ug/L or ug/Kg) UG/KG

Q

108-95-2Phenol	330	U
111-44-4bis(2-Chloroethyl)Ether	- 330	บั
95-57-82-Chlorophenol	- 330	บ
541-73-11,3-Dichlorobenzene	- 330	บั
106-46-71,4-Dichlorobenzene	- 330	Ü
95-50-11,2-Dichlorobenzene	- 330	ប័
95-48-72-Methylphenol	- 330	บ
108-60-1	7 330	บั
108-60-12,2'-oxybis(1-Chloropropane 106-44-54-Methylphenol	330	บี
621-64-7N-Nitroso-di-n-propylamine	- 330	บ
67-72-1Hexachloroethane	- 330	ប
98-95-3Nitrobenzene	- 330 330	บี
78-59-1Isophorone	330	บ
88-75-52-Nitrophenol	-\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	บ
105 67 0 2 A Dimethala Land	- 330 330	บ
105-67-92,4-Dimethylphenol 111-91-1bis(2-Chloroethoxy)methane		_
111-91-1	330	ָ יי
120-83-22,4-Dichlorophenol	330	ָּט
120-82-11,2,4-Trichlorobenzene	330	Ŭ
91-20-3Naphthalene	330	Ū
106-47-84-Chloroaniline	330	U
87-68-3Hexachlorobutadiene	330	ט
59-50-74-Chloro-3-Methylphenol	330	ט
91-57-62-Methylnaphthalene	330	ט
77-47-4Hexachlorocyclopentadiene	330	ט
88-06-22,4,6-Trichlorophenol 95-95-42,4,5-Trichlorophenol 91-58-72-Chloronaphthalene	330	บ
95-95-42,4,5-Trichlorophenol	830	บ
91-58-72-Chloronaphthalene	_j 330	U
88-74-42-Nitroaniline	830	บ
131-11-3Dimethylphthalate	_ 330 	U
208-96-8Acenaphthylene	_ 330	U
208-96-8Acenaphthylene 606-20-22,6-Dinitrotoluene 99-09-23-Nitroaniline	330	U
99-09-23-Nitroaniline	830	ט
83-32-9Acenaphthene	⁻ 330	1 11

FORM I SV-1

OLMO3.0

SBLK3

ab Name: SWL-TULSA Contract: 68-D5-0022

and w

Lab Code: AATS Case No.: 25159 SAS No.: SDG No.: FFG02

Matrix: (soil/water) SOIL Lab Sample ID: BL1218SA

Sample wt/vol: 30.0 (g/mL) G Lab File ID: M4045.D

Level: (low/med) LOW Date Received: / /

% Moisture: 0 decanted: (Y/N) N Date Extracted:12/18/96

Concentrated Extract Volume: 500(uL) Date Analyzed: 12/20/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0

CAS NO. COMPOUND (ug/L or ug/kg) UG/kG Q

51-28-52,4-Dinitrophenol	830	U
100-02-74-Nitrophenol	830	Ū
132-64-9Dibenzofuran	330	บ
121-14-22,4-Dinitrotoluene	330	Ū
84-66-2Diethylphthalate	330	Ū
7005-72-34-Chlorophenyl-phenylether	330	Ü
86-73-7Fluorene	330	บี
100-01-64-Nitroaniline	830	บ
534-52-14,6-Dinitro-2-methylphenol	830	Ü
86-30-6N-Nitrosodiphenylamine (1)	330	. ប
101-55-34-Bromophenyl-phenylether	330	บ
118-74-1Hexachlorobenzene	330	บั
87-86-5Pentachlorophenol	830	บั
85-01-8Phenanthrene	330	บ
120-12-7Anthracene	330	Ū
86-74-8Carbazole	330	บี
84-74-2Di-n-butylphthalate	19	Ĵ
206-44-0Fluoranthene	330	Ŭ
129-00-0Pyrene	330	Ū
85-68-7Butylbenzylphthalate	330	Ū
91-94-13,3'-Dichlorobenzidine	330	Ŭ
56-55-3Benzo(a)anthracene	330	Ū
218-01-9Chrysene	330	Ŭ
117-81-7bis(2-Ethylhexyl)phthalate	330	Ū
117-84-0Di-n-octylphthalate	330	Ū
205-99-2Benzo(b)fluoranthene	330	l ΰ
207-08-9Benzo(k)fluoranthene	330	lŏ
50-32-8Benzo(a)pyrene	330	ไ ซั
193-39-5Indeno(1,2,3-cd)pyrene	330	l ซั
53-70-3Dibenz(a,h)anthracene	330	បី
191-24-2Benzo(g,h,i)perylene	330	ıπ
TOT 24 2 Demao(Almir/herlige	1	
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(1) - Cannot be separated from Diphenylamine